CLERK'S COPY.

Vol. III

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1933

No. 440

BENJAMIN F. LINDHEIMER AND OTHERS, CONSTITUTING THE ILLINOIS COMMERCE COMMISSION OF THE STATE OF ILLINOIS; OTTO KERNER, ATTORNEY GENERAL OF THE STATE OF ILLINOIS, AND THE CITY OF CHICAGO, APPELLANTS,

vs.

ILLINOIS BELL TELEPHONE COMPANY

No. 548

ILLINOIS BELL TELEPHONE COMPANY, APPELLANT,

vs.

BENJAMIN F. LINDHEIMER AND OTHERS, CONSTITUTING THE ILLINOIS COMMERCE COMMISSION OF THE STATE OF ILLINOIS; OTTO KERNER, ATTORNEY GENERAL OF THE STATE OF ILLINOIS, AND THE CITY OF CHICAGO

APPEALS FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF ILLINOIS

FILED SEPTEMBER 8, 1933

FILED OCTOBER 25, 1933

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1933

No. 440

BENJAMIN F. LIDNHEIMER AND OTHERS, CONSTITUTING THE ILLINOIS COMMERCE COMMISSION OF THE STATE OF ILLINOIS; OTTO KERNER, ATTORNEY GENERAL OF THE STATE OF ILLINOIS, AND CITY OF CHICAGO, APPELLANTS,

vs.

ILLINOIS BELL TELEPHONE COMPANY

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF ILLINOIS

VOL. III

INDEX

		Page
Testimony of	Harold D. Arnold	2104
	Lyman F. Morehouse	2120
	Otto B. Blackwell	2129
	Dr. Frank B. Jewett	2143
	John G. Roberts	2165
	Frank W. Jewett (recalled)	2167
	Theodore G. Miller	2203
	Cajetan Morsack	2212
	James J. Pilliod	2216
	Harry H. Carter	2222
	Clyde Uhrig	2228
	Pierre W. Saxton	2236
	Bancroft Gherardi	2242

JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., SEPTEMBER 20, 1933

	Page
Pierre W. Saxton (recalled)	2252
Clyde Uhrig (recalled)	2267
James F. Behan	2269
Edgar S. Bloom	2272
Arthur W. Page	2282
Edgar S. Bloom (recalled)	2289
Pierre W. Saxton (recalled)	2252
James F. Behan (recalled)	2292
Clyde Uhrig (recalled)	2294
Seymour L. Andrew	2295
Harry H. Carter (recalled)	2304
Cajetan Morsack (recalled)	2312
Robert W. Burgess	2315
Daniel C. Collins	2315
Cajetan Morsack (recalled)	2316
Harry H. Carter (recalled)	2319
Pierre W. Saxton (recalled)	2320
Cajetan Morsack (recalled)	2320
Statement of Harold D. Arnold	2322
Stipulation as to patents	2322
Stipulation as to articles appearing in different publications	2325
Stipulation re exhibits marked for indentification only	2325

	Original	Print
Additional objections to exhibits offered by defendants	2329	2329
Defendants' answers to plaintiff's additional objections to exhibits, etc	2353	2352
Plaintiff's amended requests for findings	2406	2389
Defendants' requests for findings	2448	2420
Mandate of U. S. Supreme Court	2523	2479
Order denying motion to dismiss, etc	2526	2482
Order amending order denying motion to dismiss, etc	2529	2483
Order denying motion to dismiss, continuing restraining order, and setting cause for hearing	2530	2484
Bond of Illinois Bell Telephone Co	2536	2488
Order substituting parties defendant	2541	2491
Extract from motion of defendants for rule upon plaintiff to furnish certain data, documents, and records	2544	2493
Extract from memorandum of plaintiff in opposition to motion for rule	2545	2493
Orders granting leave to take depositions	2548	2495
Order denying defendants' motion for production and inspection of documents	2555	2500
Order substituting party defendant	2556	2500
Order substituting judge	2558	2501
Opinion per curiam	2559	2502
Findings of fact and conclusions of law	2572	2514
Order substituting parties defendant	2580	2522
Final decree	2583	2524
Petition for appeal	2586	2526
Assignments of error	2589	2527

		Page
Order allowing appeal	2660	2579
Orders extending time	2662	2579
Notice of lodgment and motion for approval of statement of evidence	2664	2580
Order approving statement of evidence	2666	2581
Order identifying document to be incorporated in record	2668	2582
Præcipe for transcript of record	2672	2583
Statement of points to be relied upon and designation as to printing record	2677a	2586
Stipulation as to exhibits	2679	2593

[redacted]

IN THE

District Court of the United States

FOR THE NORTHERN DISTRICT OF ILLINOIS,

EASTERN DIVISION.

ILLINOIS BELL TELEPHONE COMPANY, Plaintiff, vs. G. GALE GILBERT, J. PAUL KUHN, WALTER H. WILSON, WILLIAM M. BRINKMAN, PHIL W. COLLINS and PAUL SAMUELL, the persons constituting the Illinois Commerce Commission of the State of Illinois, and OSCAR E. CARLSTROM, Attorney General of the State of Illinois, Defendants, and CITY OF CHICAGO, a municipal corporation, Intervenor.	In Equity No. 3746. — Heard before Hon. Evan A. Evans Hon. George T. Page Circuit Judges and Honorable James H. Wilkerson District Judge.

ABSTRACT OF RECORD

Defendant's Evidence, Second Hearing

(Deposition)

Volume VII—(Pages 2004 to 2327)

Depositions taken on behalf of defendants pursuant to orders of court of December 4 and December 8, 1931.

Appearances:

Edward L. Blackman, Esq.,
William H. Thompson, Esq., and
C. M. Bracelen, Esq., counsel for plaintiff.
George I. Haight (Chicago, Illinois), Esq.,
Benjamin F. Goldstein (Chicago, Illinois), Esq., and
Edmund D. Adcock (Chicago, Illinois), Esq., counsel for defendants.

8 HAROLD D. ARNOLD, a witness for defendant:

Direct Examination by Mr. Haight.

I reside 174 Summit avenue, Summit, New Jersey; I am Director of Research of Bell Telephone Laboratories, Inc.; attended college at Wesleyan University, Middletown, Conn., and later at University of Chicago, specializing in physics and mathematics, and receiving degree of Doctor of Philosophy in 1911; I have been since then employed continuously in substantially present line of work; I was first employed in Engineering Department of Western Electric Co., beginning January 2, 1911, to do research work in vacuum tube devices.

9 In 1925 Bell Telephone Laboratories, Inc., was established, which continued the same class of work done by the Engineering Department of the Western Electric.

I have had contact with the Department of Development & Research of the A. T. & T. and became familiar with the

10 personnel of that department in 1911. I don't know when the name "Department of Development and Research" was given. I sometimes discuss problems with the members of the Department of Development & Research of the A. T. & T., primarily as such problems relate to my own work and not as they relate to theirs; so I have no familiarity with that department's own problems.

The Bell Telephone Laboratories, Inc., does engineering and research work in telephone communication. There are possibly four sources from which problems arise in my own work with the Bell Laboratories, and those are directly from

the A. T. & T., from Western Electric, from work in my
11 own department and from work of other departments in the laboratory. I should add also Electrical Research Products Corporation as a source.

I am not familiar with the organization or function of the Electrical Research Products, Inc. (called for convenience E. R. P. I.), but I know it is concerned with motion picture engineering and consulting work in acoustics.

My department in the Bell Laboratories is known as "Department of Research." The other departments are the Systems and the Apparatus Departments and a group of general departments including Educational, Accounting and
12 Publications. The Systems Department deals with problems of associating apparatus and systems for telephone use. The Apparatus Department designs and develops specific communication apparatus. I am not, however, familiar enough with that department to name many kinds. However, I do know that they design loading coils, relays, ringers, transformers, repeating coils, retard coils, dials, sub-
13 scribers' equipment, which includes Bell boxes, and other apparatus of that nature; telephone cables, phonograph recording apparatus they design; talking motion picture equipment; I don't know whether that department does research work in respect to talking motion picture equip-
14 ment because it is difficult to define the term "research work," but as I understand it, research means the study of substantially new things or substantially new ways of looking at old things.

I don't know whether that department has to do with both theatrical and non-theatrical apparatus, but it does have to do with recording apparatus, reproducing apparatus in connection with talking motion picture equipment.

My department does not directly or indirectly have anything to do with the recording apparatus in connection with talking motion picture equipment except answering questions of a general nature from time to time at the request of other departments and in connection with answering such questions we make inquiry, research or investigation. At one time or another I think we have done research work with reference to all that have been mentioned.

Work has been done in connection with the research or design by the departments of the Bell Laboratories with public address apparatus, not, however, with regard to the apparatus itself in its commercial form but as to some of the principles that underlie the operation of such apparatus.

I do not understand the term "electric phonographs for theatres" but I do not think that my department has had anything to do with those because we do not make electric phonographs for theatres, nor does the Bell Laboratories have anything directly to do with electric phonographs for broadcasting stations, but my department has answered questions with regard to such devices and in connection with the answering of questions has performed certain experiments.

Bell Laboratories has had something to do with amplifiers for submarine telegraph cables, having studied the principles underlying their design and having designed such amplifiers. It has studied the principles and made some designs of multiplex telegraphy on submarine cables. We have made tests on submarine cables and have used testing apparatus of our own design. We have done research work in connection with that subject. We have studied picture transmission apparatus and designed it; also hearing aids, such as pick-up transmitters, amplifiers and receivers.

Under the term "deaf apparatus" and "audiophone," I usually think of a combination of receiver and amplifier and transmitter.

We have studied the principles of electrical stethoscopes and have designed some.

I do not recall that any of the problems in connection with any of the subjects, the apparatus of which I have mentioned, have come to the Bell Laboratories from the Development and Research Department of the A. T. & T. I wish to modify that. Some of these matters did come from the Department of Development & Research of the A. T. & T., such as transmission of pictures, and phonograph recording apparatus. I do not remember in exactly what form that problem came to us. I do not recall that any problems in connection with talking motion picture equipment came directly from the Development & Research De-

partment of the A. T. & T. The same as to public address apparatus for theatres,—I do not know its origin.

I do not know anything about the origin of electric phonographs for theatres or for broadcasting stations, nor do I remember the origin of amplifiers for submarine telegraph cables nor terminal apparatus for mutiplex telegraphy and submarine cables or testing apparatus for cables.

Picture transmission apparatus came from the Department of Development & Research, A. T. & T.

Certain work with regard to hearing aids did come from the Department of Development & Research, A. T. & T.,
22 but I cannot recall what those problems were except that some problems relating to the use of hearing aids on subscribers' equipment for deafened telephone subscribers came to us from that department. I do not remember any other department of the A. T. & T. from which any of these came.

23 The problems coming from the Western Electric Company related to matters of materials and manufacturing procedure and the design of apparatus, including carbon for telephone transmitters, alloys for use in various processes, including magnetic materials and non-ferrous materials, insulating materials used on conductors and many problems relating to apparatus designed.

24 Some of the work originating with the Western Electric had to do with insulating material for conductors, but I don't know over what distances such conductors are used, but I have every reason to believe that they are used for all sorts of distances, long and short, and the same is true with regard to other work that I am familiar with and have mentioned; as far as I know, every piece of telephone apparatus can be connected with telephone circuits of any length.

I have mentioned all of the things that I can think of at the moment originating with Western Electric.

25 With reference to repeaters, Bell Laboratories developed and designed them. I don't know in what kind of service they are used. All I know is that they are used for repeating telephone conversations but I am not familiar with the telephone plant, only that they are used in a telephone plant. Repeaters are used in many places, in fact wherever

amplification is necessary, but I don't know enough about the operation of the telephone plant to be able to distinguish between long distance use and other uses.

I have not attempted to answer with respect to the work in the other departments of the Bell Laboratories the work originating with Western Electric.

26 The work in my department sometimes comes from the Apparatus & Systems Department as there are frequently investigations which lie somewhat outside of their own specific line of work and about which they consult my department. These problems are rather small problems and have to do with questions of mathematical, and chemical analyses and in some cases relating to the transmission of speech through certain pieces of apparatus as to whether this apparatus would affect the quality adversely.

I remember one problem which originated with the E. R. P. I. on the measurement of the absorbing power of acoustic materials, and one on the recording of speech on film, and one on the recording and reproduction of speech from phonograph records.

There was another problem I remember relating to insulating materials for submarine cables and a related problem of magnetic materials that related to submarine cables.

26-A My department's work is related to a study of the principles underlying the recording of speech on films and a survey of the possibilities and relative desirability of different methods. The earliest work on that problem that I can recall began about ten years ago. However, the work arising from E. R. P. I. came about four years ago, but work of a general nature on that problem began I think about ten years ago. The request then came from the Development & Research Department of A. T. & T. and was work in connection with the study of the nature of speech on telephone wires. That was before the present company was organized. The work at that time was done by the

27 Engineering Department of the Western Electric. I have not in answering questions and speaking of the subject matter heretofore, made any distinction between Bell Laboratories and its predecessor, the Engineering Department of Western Electric.

In connection with the study of the problem of reproduc-

tion of speech on phonograph records, we investigated the fundamental underlying principles and made some experiments and designed apparatus for that purpose, which work ran over a period of eight or nine years.

On the question of insulating materials for submarine cables, we studied various properties of such materials. On problems of submarine cables that are not lead covered, we worked on those probably ten or fifteen years.

28 Bell Laboratories or its predecessor, Engineering Department of Western Electric, has worked on radio. My own department carried out experimental work and studied the principle of radio and the design of equipment. My department has particularly studied vacuum tubes, and upon that I have worked myself. The work began in 1912, hav-
29 ing been continuously and still is in progress. That work has resulted in the use of vacuum tubes in the communication industry. Vacuum tubes are used in connection with telephone repeaters, radio transmission and reception. These are the principal uses.

The work that is completed in my department usually leads to the design of equipment for communication purposes and the information developed passes on to one of the other departments, Apparatus or Systems or both, for use in their jobs. In general the work of my department precedes
30 or consists of the early stages of the consideration of new things for the communication industry frequently, pointing to the desirability of new or different apparatus, and the development of such apparatus falls into the Apparatus Department, such apparatus ultimately taking a part in the communication system, and has to be properly associated with other apparatus. The work of association falls into the Systems Department. The work of my department, for the most part materializes through those other departments.

There are about 1,000 men employed in my department. I don't know the number for the other departments. There is associated with the Department of Research under my administration a shop for the manufacture of vacuum tubes, and that shop has mechanical people whose numbers vary
31 from time to time. I have not included that number in my statement. There are about 300 employed in the

vacuum tube shop now. The maximum number in that shop has been about 1,000. At its start there were very few people—about 100.

The vacuum tubes are manufactured for the Western Electric except such as are used for experimental purposes in the Bell Laboratories.

32 There are not any industries dependent for being on vacuum tubes, but such tubes are the basis of the present telephone and radio plants. There are very many purposes for the vacuum tubes, but they are used generally for the purposes of amplification and in the talking motion picture industry. I don't know whether any of these products are given a name to distinguish them from telephone
33 apparatus generally, but we frequently speak of some of these things as by-products, such as those things which have indicated usefulness for some purposes outside of the communication industry, and in that class come certain developments of the phonograph and talking motion pictures. There are undoubtedly others much smaller in number.

I don't know of any publication that would help in listing those things. Members of our company publish sci-
34 entific articles. It puts out a magazine called "Bell Laboratories Record" once a month. I don't know whether the Department of Development & Research, A. T. & T., has a publication of that same general nature.

I don't know who owns the stock of the Bell Telephone Laboratories. (It is conceded by counsel for the plaintiff that the stock of the Bell Telephone Laboratories is owned half each by Western Electric and A. T. & T.)

35 The laboratories charges for the work done and such charges are determined by certain processes that are set up in the Accounting Department by which the time of employees is allocated to specific projects as a basis for charges. I don't know exactly how overhead is charged or allocated. The work is charged entirely on a time basis without regard to the character or the results of the work.

Some undertakings we work upon fail. I have no way of determining the relation of failures to successes, except that the successes are enormously in the preponderance, which is due to the fact that we watch very carefully and promptly,

if any project shows evidence of not succeeding, we stop
36 it. Our aim is that the non-promising things be killed early. I don't think it would be possible for any records to determine the relation of failures to successes.

Very frequently work has already been done upon projects coming to us from the various sources mentioned, as for
37 instance the Department of Development & Research of the A. T. & T., the Western Electric Co., etc. In almost all cases some progress has been made on the problems that come to my department and that progress has led to the point where experimentation, and by that I mean work with actual apparatus, is indicated as desirable, or necessary.

Such is true of the problems coming from Development & Research, A. T. & T. With regard to work coming from the Western Electric, it has apparatus and facilities for experimentations. The problems coming from them usually require peculiar apparatus or peculiar processes of experimentation that we are equipped to carry out better than they. Now I am speaking of the work in my own department.

The problems from E. R. P. I. come in the form of a statement of requirements for apparatus to meet. Sometimes there have been experiments by E. R. P. I. as to such problems.

38 The problems that come from Development & Research, A. T. & T., have usually received careful engineering attention, which includes not merely a statement of the functions that are desired to be obtained or the apparatus that is desired to be developed, but also includes a careful study of the ways in which such results might be obtained up to the point where experimentation is called for.

With respect to E. R. P. I., there is not the same degree of engineering consideration given to their problems when they come to us.

There has been some winnowing out by the Development & Research of the A. T. & T. and by Western Electric which decreases the percentages of failure with respect to the problems coming to us from them.

Occasionally people are transferred from Development & Research, A. T. & T. to Bell Laboratories, and vice versa.

The numbers are not large; sometimes loans, sometimes
39 permanent.

Shortly after the time when we started on motion picture development certain people were transferred from my department to other departments and also to E. R. P. I. As to my department, there was no transfer from Development & Research, A. T. & T., to Bell Laboratories, and I do not know of any such transfers with respect to other departments of the laboratories.

Among the requests coming to Bell Laboratories for work from the Western Electric I recall none for work for the Graybar Co.

40 Mr. Moravec has charge of the records which show the sources of requests for work in my department. I do not know in what form they are kept, and some records were kept when the laboratories were in the Engineering Department of the Western Electric.

There was some work in connection with the Western Union Telegraph Co., but I do not recall just how the work originated. I do not know of its doing any work for the Postal Telegraph & Cable Co. My department has done certain work in connection with Northern Electric engineers, but always at the request of Western Electric. We must certainly have done work in my department for International Western Electric but I do not recall it now. I don't know as to the International Standard Electric. We have done some work for the U. S. Government. I don't recall any work done for the Automatic Electric Co.

I don't know whether the Western Electric makes any profit on work done for it. Some of the work done by Bell Laboratories extends over a great period of years, such as work on vacuum tube development. The first tubes became
42 of practical use in 1913, and since that time there has been constant work and progress, so that now the tubes are altogether different and better than those of the earlier years. The same is true in regard to the studies of the characteristics of telephone speech and the requirements for the proper transmission of such speech. Those problems have been in constant progress during twenty years, to my knowledge, and year by year there have been changes in prac-

tice and some improvement in results, and they are still in progress.

Vacuum tubes were first used between New York City and Washington in 1913 and for continental telephonic communication in 1915. The work prior to 1913 on the specific tubes that were used had gone on for about a year, and upon the general subject, to my knowledge, since I came with the company in 1911. There had been work done on tubes prior to my coming with the company.

43 There have been instances where work was begun in a certain year and did not come into practical use for seven, eight or ten years thereafter. For instance, development of magnetic materials which found their great usefulness in loading coils—the early work on those alloys certainly preceded the use of the apparatus by more than the period of seven or eight years.

Another example is the study of insulating properties of materials used on wires which were studied over a considerable period of years and during recent years there has been a considerable change in the process we used as a result of that study. That inquiry and investigation extended for seven or eight years before the results were put into practical use.

44 Frank B. Jewett is president of the Bell Telephone Laboratories and vice president of the A. T. & T. in charge of its Development and Research Department. I have been Director of Research of the laboratories for about six years. While I was in the engineering department of the Western Electric I was called research engineer.

The problem in a repeater is to add energy to a voice current that has faded away as it goes along a telephone
45 line, so that it can go on from that place with greater power, and the difficulty of the problem resided in getting something that would work fast enough to respond to the high frequency currents that constitute speech, and the occasion for solving the problem was to extend the reach of telephone communication. From New York to San Francisco there are probably 15 to 50 repeaters, depending on the type of construction. The type of repeater used in the Bell System is the vacuum tube repeater. The vacuum tube repeater enters into the problem of transmission in the main

ner that I just broadly described.

Since 1923 the principal improvement in vacuum tube has been to get a repeater that operates with much less power supplied to the filament which results in a very large saving in the power equipment necessary in a telephone exchange. Coupled with that, is another important improvement in the length of the life of the repeater itself, which has been extended to something like 35,000 hours of continuous service. Consequently, repeater bulbs expense is lessened and the service may be given more continuously through them, since with longer life they are not subject to interruption to the same extent.

Another outstanding development since 1923 has been permalloy, which is a magnetic material of extraordinary properties used in loading coils. Another is the crystallization of the telephone hand set.

It is substantially since 1923 that the transmitter and receivers and assembly of the present telephone hand set has been perfected.

Since 1923 we have obtained better dielectrics for use in condensers and better arrangement of the materials in condensers such as improvements in the enamel insulation

47 on enamel insulated wire; improvements in the finishes for telephone apparatus; improvements of a mechanical nature resulting in longer life, and improvements in contact metals which form an important part of telephone systems and the development of special relays which will operate with the very small currents that we have in the telephone plant; improved carbon for the carbon transmitter of the telephone set; improvement in the circuits of subscribers' apparatus particularly in connection with the elimination of side tone in telephone receivers; improvements in net works and filter design to correct for the detriment that voice currents suffer in going over the telephone lines; improvement in optical methods of recording speech, which, for example, are used in our apparatus for mechanically speaking numbers called on the dial telephone.

48 Condensers are used in subscribers' telephone sets and very widely in the electrical art, but the condensers upon which I have worked have related to the communication industry, that is, transmission of intelligence by means of elec-

trical currents, including radio, signalling through the telephone system at whatever frequency is carried, television, transmission of pictures. I do not include talking movies. I would include the operation of telegraphy over a system.

49 All the work that we have done in the phonograph field has come to fruition since 1923; also aids for the hard of hearing, and talking motion pictures; and some of the work connected with public address systems, which is a system or device whereby a voice or program is made audible to a large audience by electrical means, including microphones, amplifiers and loud speakers, has fallen within that period.

My department has never done anything with reference to teletypewriters or telegraph typewriters. I don't know whether other departments of the Bell Laboratories have.

50 My department in 1923 I think had about 300 or 400 people in it. The occasion for the increase from that time to now has been the growth in the numbers of problems of the various kinds I have mentioned.

The same or substantially the same divisions or departments have existed in the Bell Laboratories since it was organized, making allowance for the changes in personnel and work. The principal difference between the Research in my department of the laboratories and the research of the Development & Research Department, A. T. & T., is that Development & Research A. T. & T. does not make use of experimental apparatus to any considerable extent but conducts its experiments with facilities that exist in the telephone company, whereas in my department, the majority of all the work is carried out with experimental equipment, laboratory apparatus facilities, power supplies, motors, balances and that sort of thing that are special to the work and frequently have to be specially designed and manufactured for the work. My company has more than one building in the sense of occupying space in more than one building. We have some small laboratory buildings in the field which we use for radio experimentation solely. We have no laboratory devoted solely to television. We have a part of a building that we devote solely to talking pictures. It is a building attached to the main building. It is on the Bank Street side of our laboratory group. It has about three stories but I

don't know the floor area.

53 There have been only one or two cases when one of my department's men have gone into the field to observe the operation of talking motion picture equipment. I don't know about the sending of men from other departments.

The work in the talking picture building is in connection with the recording and reproducing of speech from films and other records, and new devices are tried out there which is a large part of the work done.

My understanding is that E. R. P. I.'s principal business is talking motion pictures. Probably some half dozen men went from my department at one time or another to E. R. P. I.—one or two were scientists and the others were

54 laboratory engineers or assistants. No men were sent from my department to Western Electric in connection with talking pictures. I don't know as to other departments.

The period prior to 1923 saw the growth of the vacuum tube from an apparatus that was difficult to manufacture with uniform characteristics, into one that could be manufactured with great uniformity. It saw the settlement of the major features of rough design which allowed us to produce tubes that were fairly satisfactory for our purposes. That

55 period was a period of blocking out the problem of vacuum tube design and of obtaining some of the fundamental information about the production of vacuum tube filaments and some of the information about the operating characteristics of vacuum tubes. The period from 1923 on has been more nearly a period of perfecting these devices and making them cheaper and more satisfactory in service; also, from 1923 on, new principles of vacuum tube manufacture have been found and some entirely new lines of work have been started in connection with the arrangement of the parts inside the tube to make them function better.

Referring to telephone hand sets, they have been used for particular purposes as long as my memory runs in the telephone plant, but these hand sets were not satisfactory for use by the public on ordinary subscribers' premises. I cannot point to any time that work on the modern hand set may be said to have been started. It has been an evolution

56 rather than a specifically started development. There has been work on hand sets all the time since my first

connection with the Western Electric. Satisfactory hand sets first came into commercial use within the last five years, I should say.

The research work done is budgeted during the last two or three months of each year. The budget is subject to revision at any time. On making up the budget I assemble figures for the coming year in view of the personnel and the problems that either have been authorized or appear to be in the process of arising. I believe other departments function similarly. Each project has a cost estimate as-
57 sociated with it which may be on a unit budgetary basis or in some instances may be an estimate extending over several years.

From a budgetary point of view the records are kept as to a prediction of expense on projects and as to the actual expense incurred and these records are reviewed frequently in the course of the project. There is no set custom as to the making of reports on each project at particular times.

The number of people in my department has been diminishing, which includes expense also.

58 In carrier current systems the signal which is transmitted is carried by a high frequency alternating current and by high frequency I mean a frequency high with respect to the signal. If the signal to be transmitted is itself a low frequency current, then the carrier current may not be very high. In general one thinks of an example of carrier current operation as one in which an alternating current of perhaps 7,000 or 8,000 cycles is modulated by a voice current and this modulated high frequency current is transmitted through the system and then at the end of its journey is demodulated and restored to intelligible speech.

The carrier current system allows the transmitting of a large number of telephone currents, telephone conversations, over the same physical plant, over the same wires in the telephone company's plant and thereby saves the expense of the addition of wires as the traffic increases. I don't know whether carrier current systems are used in local exchanges.

59 In the course of research and development work, inventions are made upon some of which patents are secured. I neglected to mention the patent department in listing the departments of the Bell Telephone Laboratories.

When we suspect or hope that we have made an invention the material relating to it is submitted to the Patent Department for appropriate action and there it is handled so far as the prosecution of the application for the patent is concerned. There is a Patent Department in the A. T. & T.

60 The engineering work of the Western Electric is carried on under some other name than Development & Research, but I don't know what it is.

Mr. John G. Roberts is head of our Patent Department and has been since the incorporation of the Bell Laboratories.

I don't know anything about the handling of charges in connection with that work. I have taken out several patents myself, a few on radio, I don't know how many. Our Patent Department keeps lists of the various patents secured and applications filed.

I know Mr. H. A. Appel. He is connected with Development & Research, A. T. & T. Mr. R. M. Allen was with
61 the Western Electric Co. Mr. H. W. Nichols, who died about six years ago, was in the Engineering Department of the Western Electric. W. L. Betts is an employee of the Bell Laboratories. O. B. Blackwell, Development & Re-
62 search, A. T. & T. R. Bown same; O. E. Buckley, Bell Laboratories. G. A. Campbell, Development & Research, A. T. & T.; J. R. Carson, same. I don't know G. Cirsson. L. M. Clement was at one time in the Engineering Department of Western Electric; A. W. Kishpaugh, Bell Laboratories; E. H. Colpitts, Development & Research, A. T. & T.; J. B. Crandall has been dead several years, he was formerly in Bell Laboratories; A. M. Curtis, Bell Laboratories; H. C. Edgerton, at one time Western Electric, I don't know about him of late years; G. W. Elman, Bell Laboratories; C. R. Englund, same; L. S. Espenschied, Development & Research, A. T. & T.; A. L. Fitch was at one time Engineering Department, Western Electric; I don't know where he is at present time. J. O. Gargon, I don't know; A. Haddock was at
63 one time Laboratories, I think not now; R. E. L. Hartley, R. A. Heising, M. J. Kelly, B. W. Kendall, W. H. Martin, R. C. Mathes, J. Mills, A. M. Nicolson were at one time in Bell Telephone Laboratories; H. S. Osborne, Operation & Engineering, A. T. & T.; H. W. Read was at one time Western Electric; I don't know where he is now; W. L. Richards, who

died a couple of years ago, was with the Bell Labora-
64 tories; J. C. Shelling, E. O. Scriben, H. E. Shreeve, L. J. Sivian, E. R. Stoekle, H. N. Stoller, now or formerly with Bell Laboratories, H. J. Van der Bijl was at one time an employee of the Western Electric; K. S. Van Dyke, Development & Research, A. T. & T.; H. W. Weinhart, R. H.
65 Wilson, W. Wilson, J. P. Schaefer, Bell Laboratories; P. I. Wold was at one time in Patent Department, A. T. & T.; also at one time Laboratories.

Practically all the patents that have been issued to me relate to telephone communication, the first ones to a telephone repeater known as the mercury arc repeater, and subsequent ones related to the vacuum tube repeater; do not recall them in detail. I am quite sure that these inventions of mine have been used in repeaters or in radios or in both.
66 I will check over and ascertain whether the following named patents issued to me relate to and are usable in radio:

No. 1,114,845 of October 27, 1914, electrical relays.

No. 1,128,279 of February 16, 1915, electrical wave amplifier.

No. 1,128,280 of February 16, 1915, thermionic detector.

No. 1,129,942 of March 2, 1915, gaseous repeater and circuits of low impedance.

No. 1,129,943 of March 2, 1915, same title.

No. 1,329,283 of January 27, 1920, thermionic amplifier.

No. 1,349,252 of August 10, 1920, methods of and means for utilizing thermionic current.

No. 1,354,939 of October 5, 1920, vacuum tube devices.

No. 1,367,224, February 1, 1921, radio receiving system.

No. 1,375,481, April 19, 1921, power modulator for radio transmission.

No. 1,398,665, November 29, 1921, thermionic amplifier.

No. 1,403,475, January 17, 1922, vacuum tube circuits.

No. 1,231,984, July 3, 1917, H. W. Nichols and H. C. Arnold radio transmission.

A dollar is supposed to be given to employees for each patent taken out by them on inventions, but I have never seen the dollar.

(For deposition of George A. Campbell, see Abst., Vol. IV, pp. 1230-39.)

LYMAN F. MOREHOUSE, for defendants.

Direct Examination by Mr. Haight.

94 I reside at Montclair, New Jersey; I am Equipment Development Engineer, A. T. & T., and have been since 1909; prior to that from 1906 to 1909 I was with Western Electric Co.; prior to 1906 for four years I was at University of Michigan on Physics and Electrical Engineering Faculty, and prior to that with Washington University at St. Louis for a year in the Department of Physics, doing instructing work. Prior to that time I was instructor in mathematics and physics and later acting principal of the Marquette High School, Marquette, Mich., and instructor in mathematics and other subjects in Detroit Central High School. At the
95 University of Michigan I was instructor and later assistant professor of electrical engineering.

While I was with the Western Electric, for a few months, I was in the laboratories in Chicago and then I was sent by that company to London and was connected with the London house for about three years as transmission engineer in Europe.

When I first came to the A. T. & T. from the Western Electric I was Equipment Engineer until July 1, 1919, when I became the Equipment Development Engineer, which is my present title. I am the head of one of the departments of Development & Research, A. T. & T. My so-called de-
96 partment may be called a division of Development & Research Department, being the Equipment Development Division. The Engineering Department of the A. T. & T. did the work of the Development & Research about July, 1919. Prior to July, 1919 the Engineering Department of A. T. & T. included work of the character done by Department of Development & Research since 1919.

The engineers of the Equipment Development Division carry on studies either directly or through the engineers of Operation and Engineering as may be necessary to determine the needs of the associated companies for new central office and sub-station equipment—more particularly that part
97 which has to do with switching and signaling. Studies are also made to determine what should be the require-

ments of new system equipment for apparatus in order that it can be effective and enable the Associated Companies to meet service problems in the best way. In general that relates to all switching apparatus, to the sub-stations apparatus, except transmitters, receivers and induction coils. Mr. Blackwell, the transmission development engineer, does work on the transmissions, receivers and induction coils.

The work done by my division results in equipment manufactured and sold by Western Electric. Our problem is to determine the requirements. After the requirements have been determined by my division for some new piece of apparatus or system or equipment, the next step is to determine the specific requirements which should be met. Then they are formulated and sent to the Laboratories which develop the apparatus or system required. When that work is satisfactorily done, it eventuates in equipment which the Western Electric manufactures for the Associated Companies.

The job of the Equipment Development Division is to determine upon requirements and upon the need for a new thing.

98 We study all the needs of the companies in the field. We make investigations and studies. In some of those studies we have occasion to call upon the Laboratories for some assistance because we cannot always tell beforehand whether a system that we may visualize at the start, is a practical sort of thing. But having gone through the necessary processes, we finally determine as to the requirements which are rather specific and definite enough so that the Laboratories know pretty definitely exactly what it is that we are trying to do. With that background and the requirements, they proceed to work out the system.

99 The process of setting up requirements gives contacts between ourselves and the laboratory so that they have a pretty good idea by the time the requirements are formulated. These requirements are definite and specific enough so that the laboratories can produce what is required. They then design or develop the system, the circuits, the switchboard, the apparatus.

For example, we might take the case of a switchboard, private branch exchange board, where in looking over the field we come to the conclusion that a different type would be beneficial to the companies. A study of the company's use of private branch exchanges of the types of things that have to do

with private branch exchanges is made; in general, the features of the private branch exchanges, as to whether we want a lamp board, the size of the board, as to the capacity of the board, as to whether they should have tie lines from one private branch exchange to another private branch exchange, as to whether we should have long extension lines
100 connected to that private branch exchange. All phases of the use of the private branch exchange are studied.

In connection with that we take into consideration the economic problems in connection with sales which is a fundamental part of our problem. From our relations with the field and the Operation and Engineering Department we have a pretty good picture of the number of private boards to be used when developed. We make an estimate and having determined what these requirements should be we then set them down as part of the requirements covering the development of the Private Branch Exchange. Those things then go to the laboratory, and in most all our problems we have con-
101 sultations with the laboratories and finally there is nearly always a letter to the laboratory authorizing the development work, stating what we want to do, setting forth the requirments in detail, which are the formal instructions to the laboratories.

The laboratories then analyze the problem, determining what seems to be required in the way of new circuits and new apparatus and lay their plans accordingly. The laboratories then develop that to the point where from the laboratory standpoint it appears that it will work. Then there is a review of what has been done to see whether the requirements have been met, whether our ideas of the cost of the board, of the performance of the board and of the future of the board have been met. I am speaking only of my division.

102 Sometimes we review that work with the laboratories. Sometimes we can answer the question from the results of the laboratory tests and from the work the laboratories have done—tests on apparatus and tests on circuits.

Cost estimates have been prepared to represent the manufacturing costs. Sometimes we go a little bit further and try out one in the field. If the results are satisfactory, a description of what has been developed is prepared. It is standardized and the Associated Companies through the Department of Operation & Engineering, A. T. & T., are advised. In the

meantime the laboratories, when it is clear that that is the step we are going to take, proceed to prepare such information as is necessary for the Western Electric to manufacture the equipment which has been sent to them.

When I have said "standardize it," I meant standardize for the associated companies.

103 The Equipment and Development Division Engineers do not have to do with anything but Systems and Apparatus for the Associated Companies. When apparatus is standardized the Associated Companies buy it. The Equipment & Development Division does not do any work on by-products. I presume the Transmission Development Division may do work on by-products, perhaps the Outside Plant Division, although I doubt that.

Since 1923 there have been improvements in switching systems, in sub-station equipment and apparatus that we find in switching systems and in sub-station equipment. Prior to 1923 there were improvements in switching systems and
104 in sub-station equipment all along the line. In the term "switch systems," include manual switchboards, both local and toll, dial systems, panel and step by step, and private branch exchanges.

My division has studied prior to and since 1923 a little, the matter of broadcasting over wires, just as a matter of interest. A great many inventions were made in my division on which patents were obtained. They are coming through all the time; broadly, the switching and sub-station fields, which fields cover the entire scope of my division.

105 Some of the patents relate to the various features of the panel system and of the step by step system and of the manual system. Some relate to switching arrangements, some for apparatus and some to power plants. They are pretty generally scattered over the whole job.

106 The Equipment Development engineers have nothing to do with wire systems as such, but they have a great deal to do with apparatus which are used in connection with wires. The Outside Plant Development engineers have to do with wire systems. The Outside Plant Development Division is one of the divisions of the Department of Development & Research. The Outside Plant Development Division of
107 Development & Research has to do with wires, cables and certain problems in connection with loading coils. The

Transmission Development Division and the Equipment Development Division have to do with repeaters. The Transmission Development Division has to do with vacuum tubes and radio, of which Mr. O. B. Blackwell is the head. The Equipment Development Division had to do with the teletypewriter switchboard. No division had to do with talking movies. Television comes under Transmission Develop-
108 ment Division. My own division directed the development of the teletypewriter.

(*Note*: Stipulated that the signing by the various witnesses of their respective depositions and their swearing to them, are waived.)

110 Development work on teletypewriters began a number of years ago, twelve years or more. They are used by the Associated Companies for various classes of service and also in the long lines service. My impression is that the use of printers are used probably more by the Associated Companies at the present time than by the long lines and I feel that the use by the Associated Companies is going to grow very rapidly and they will use far more printers than the long lines.

111 In connection with my work, we study the needs of long lines for central office switching arrangements that the long lines use. The needs of long lines are discovered in the same way as we do with the Associated Companies, by studies and investigations which we make, also by problems as they present themselves, through the Department of Operation and Engineering and the Long Lines and the Associated Companies. We do not differentiate between the operating companies in our work as to long lines.

Service improvements in switching have resulted in benefit to long lines, such as switching systems and teletypewriters and arrangements that long lines use in connection with
112 telegraph. The switching system means one or more switchboards worked out to afford a means for connecting lines together either local lines or local and toll, and such associated equipment as is required in central offices for the operation of switchboards and to give the kind of service which they are expected to give. I mean by that terminal room equipment. In switchboards we have improved signal arrangements, apparatus, cords, plugs, jacks, terminal room apparatus, cable inside the office, facilities to the long lines

for connecting their switchboards to dial equipment
113 where that is necessary, all of which have enabled the long lines to handle calls more rapidly and more accurately with less interruptions to service.

The determination that certain equipment originating with Development & Research Department, A. T. & T., and passed on to the Bell Laboratories is satisfactory, is done in our department and in making that determination we are in consultation with the laboratories and Operation & Engineering, A. T. & T., and we take advantage of every source or facility for making sure that we are all right. The man upon whom the responsibility of making the determination finally rests, is Dr. F. B. Jewett, head of Development & Research, A. T. & T.

The matter of making equipment standard is a pro-forma sort of thing. Systems are standardized by Development & Research Department, A. T. & T., having before it the ideas of Operation & Engineering, A. T. & T., of the Laboratories and any other department that would be helpful in reaching a conclusion.

There has been no occasion in my division to study broadcasting, except as previously stated.

Outside of the switching systems and teletypewriters I have spoken of I have worked upon repeaters and telegraph systems and telegraph operation, relating to long lines. Our problems with the central office equipment are just the
115 same there as with local companies' equipment,—the study of the needs and development of the apparatus that is required to enable the long lines to give service in the best way possible.

Men in my department have taken out patents having to do with repeaters, teletypewriter systems, carrier telegraph systems and practically connected with every general
116 class of central office apparatus.

Our particular job in my division in connection with repeaters is to get them into the telephone system; that is to provide such switching and such signalling arrangements and associated equipment arrangements as may be necessary to get the repeater transmission circuit into the system. My attention lately has been, broadly speaking, devoted to two kinds of repeaters, that is, the one that is used in the telephone plant and the one that is used in the telegraph plant.

A telephone repeater handles the voice waves with or without a carrier. In telegraph systems some of the repeaters handle the high frequency waves very much as telephone repeaters and the telephone voice waves, but there are other types of repeaters where we do not use carrier,—those are the older types. At the present time in telegraphy there is a carrier repeater and an ordinary repeater made up of relays.

117 My division does not have anything to do with cables for long lines, but we do have cable wiring inside the central office; nor does my division have anything to do with loading coils. In my division we do not charge any one for the work that we do. Time is allocated to classes of work. There may be one or more jobs in each class, such as central office panel system circuits as one class, panel
118 system apparatus another class. There are six or seven main classifications to which we charge the equipment development work and these classifications are subdivided into one or more subclassifications as may be necessary for administration purposes. The main classifications are central office equipment and circuits, substation equipment, wire transmission systems, work in connection with patents, etc. With some minor modifications, the classifications above mentioned have been used for five or six years. Prior to that we did not have classifications of that kind or of that form. We kept track of our work, of course.

119 Our patent department may ask us from time to time specific questions in connection with patents. That classification, however, is not a large one so far as expense is concerned. The work of our division relates only to those matters generally handled.

Referring to wire transmission systems, there is no division as to that for long lines or for local toll or anything of that sort, nor is there any division as to switchboards, and that is true throughout.

Development & Research, A. T. & T., does not publish any magazine or journal. From time to time, however, engi-
120 neers of the department publish articles and those are published in proper journals and there is a journal in the Bell System in which some of these articles are published, the Bell System Technical Journal. I have made inventions that have matured in patents in one or two instances. They had to do with printing telegraphs.

121 Patents are handled in this way. We prepare a description of the piece of apparatus or the equipment or the system, whatever it may be, and that is transmitted to the Patent Department, A. T. & T. Mr. Folk is head of the patent department.

Some projects took some time before they matured into
122 commercial devices manufactured by the Western Electric. Depending on the particular matter, it may take a month before a job is finally completed, or it may be several years, as, for instance, the development of the dial system. It may take all the way from a week to a couple of years from the time my division starts work on a project before it is finally turned over to the Laboratories. I don't recall any at the moment, but I presume that there are some that took more than a couple of years.

Some of the projects that are undertaken in my division fail, but they are very few. They don't get very far. An idea may disappear by the end of the day or within a week or a month. I don't recall any project turned over by my division to the Bell Laboratories that has failed.

123 I couldn't give any idea of the number of projects started in a year that fail, or the number that started during the same year and succeeded; nor could I give any idea of the number that are started in a year that fail to go to the Laboratories and of those that do go, I would have to go to our records for that. Generally we keep records of all our projects, of those that fail as well as those that succeed, but we have no system of classification as to failures and successes. All of our development projects go into those general classifications that I spoke about. A project may be
124 a very large one or it may be a very small one. Some years we may have a predominating number of relatively small projects with a few large ones. Some years all the projects might be very important, but we might have as many as 10, 20 or 30 projects during the year in my division.

The records are kept in the department's office and I think there are lists of projects classified in some way as to subject matter, but I cannot answer definitely. The records are kept by Mr. Shepard.

125 For Development & Research of the A. T. & T., the men are recruited from the associated companies, long lines, universities and the Bell Laboratories. That has been

true as far back as I can remember. I don't recall ever having transferred any men from my division to Western Electric. Some of our men go to the Bell Laboratories. I am not certain whether any go to E. R. P. I. I think we lost one man to it or Graybar several years ago.

126 I am called upon occasionally to examine devices or processes covered by patents that are purchased by units of the Bell System,—Western Electric. We have not done any of that work, however, for some time. Our Patent Department might ask our views as to patents in question

127 and we would attempt as engineers to determine what value the system described in the patent would be to the Associated Companies. I have looked into the merits of patents of the Automatic Electric Company. We would examine the patents and get as good a picture as we could of the system described in the patents. We did not make any experiments. We also looked into patents of the Kellogg Switchboard & Supply Company, and we examined the merits of patents for the Western Electric coming from Herbert N. Friendly. We made an examination of the patents to determine whether the arrangements described therein would be of value to us in our work.

I think we were asked by our Patent Department for our views about certain patents of the Stromberg-Carlson Telephone Mfg. Co., and of the North Electric Company.

129 The Western Electric manufactured devices embodied in patents that I examined, as above mentioned. For example, apparatus of the step by step type embraced in patents of the Automatic Electric Company relating to machine switching.

I did not attend any conferences in 1919 respecting the organization of Development & Research, A. T. & T. Work such as has been done by Development & Research, A. T. & T. since its organization was prior to that done by the Engineering Department, A. T. & T. The general plan of carrying on our development work was substantially the same as it is now.

My duties as equipment engineer prior to July, 1919, were the same as now, except that since July, 1919, I have had additional duties relating to central office and sub-station equipment. We look to the Bell Laboratories to determine that

130 a device found to be workable can be manufactured from a practical standpoint.

Mr. H. A. Appel is connected with Development & Research, A. T. & T. in the Transmission Development Division. Mr. O. B. Blackwell is head of the division. Mr. R. Bown is in the Transmission Development Division. Mr. G. A. Campbell is Research Engineer, Development & Research, A. T. & T. J. R. Carson is Transmission & Development En-
131 gineer. E. H. Colpitts is in the Development & Research; don't know G. Cirsson or H. C. Edgerton. L. Espenschied is in the Transmission Development Division; don't know J. O. Gorgon or A. Haddock; I think Mr. A. H. Nicolson was with the Bell Laboratories at one time. H. S. Osborne is with Operating & Engineering, A. T. & T. I don't know H. S. Read. H. B. Shreeve is with Development & Research; I don't recall K. S. Van Dyke.
132 P. I. Wold formerly was with the Bell Laboratories and later with the Patent Department, A. T. & T.

There are no publications of Development & Research, A. T. & T. However, there is a Bell Telephone Quarterly and the Bell System Technical Journal, wherein articles written by engineers in Development & Research, A. T. & T. are published.

OTTO BERNARD BLACKWELL, a witness for the defendants:

138 *Direct Examination by Mr. Haight.*

I reside at Plandome, Long Island; I am Transmission Development Engineer, Development & Research Department, A. T. & T. and have been since the formation of that department in 1919. I attended no conferences at that time relative to the organization of that department. For a number of years prior to the organization of that department I was Transmission Engineer of the Engineering Department, A. T. & T.—from about 1914 or 1915. Before that I was just one of the engineers in the department, entering it in 1906, immediately upon graduating from Massachusetts Institute of
Technology in 1906 with degree of bachelor of science in
139 electrical engineering.

From 1906 until I became Transmission Engineer I was working on various jobs having to do with transmission

When I became Transmission Development Engineer of the Development & Research Department, A. T. & T. the work of the department I headed was divided and I only kept that part that came under Development & Research Department, the engineering work going over to Operation & Engineering Department, A. T. & T. The latter department has to do with advising the field, keeping in general touch with the field and advising them on the problems which arise in their work and on which they think they want advice. I have contact with that department as through them we get part of our information as to field conditions and needs. That department contacts us when some matter may be referred to them on which they want some advice from the development standpoint before replying.

The work of my division of the department of Development and Research covers generally transmission waves—waves and impulses which transmit communication. In the telephone field we are interested in the waves which are used in transmitting speech, starting with the formation of those waves by the talker, that is, the subscriber who is talking over the telephone circuit; in the transformation of those waves into corresponding electrical forms and as they go out over the various types of circuits and finally when they reach the receiving end, transformed into sound waves again and are
listened to or observed by the listener. In connection
141 with other phases of communication like telegraph we are
interested in the transmission of the waves and impulses which carry the communication.

That work in the telephone field has to do with existing telephone apparatus, and with proposed apparatus. Some of
our work has to do with the apparatus used in the long
142 lines department. The same is true of new or proposed
new telephone apparatus. The same is true of telegraph apparatus.

I should say my work also has to do with operation as there is practically nothing done that affects the telephone business that does not have something to do with operation.

My division has to do with originating of new or pro-
143 posed new apparatus. Our ideas come from other sources
than our own division, such as associated companies who may feel a need in their work; from Operating & Engineering Department, A. T. & T., who may see a need for new

propositions; from the laboratories whose work may have opened up possibilities which have not been seen before, and they may come from our own work. So far as I know,
143 none comes from Western Electric. However, they may indirectly through the laboratories, but I do not have in mind any case that arose in the Western Electric as coming to us resulting in originating any work.

The men in my division are recruited largely from schools and universities and teaching staffs of schools and universities and some from Associated Companies and one or
144 two from the laboratories. There have been cases where we thought men with the experience that they had in the operating companies would be helpful to us in working out the particular phases of the work with which they had had experience. We surely would not have chosen men that we did not think had pretty good ability—ability, knowledge and experience.

My division has been interested in telephotography—in the transmission of impulses which correspond to the picture, as these impulses are transmitted over the circuits and also as they are handled in the apparatus at the terminals. That work has been going on four years at least, so far as it has been active. There is a system of telephotography in operation at the present time that connects eight or more of the important cities of the United States, so that messages delivered at any of these can be delivered at any of the
145 other eight cities. The long lines department operates it in this part of the country. On the Pacific Coast it is operated by the Pacific Telephone & Telegraph Company.

Everything we do comes under the fields of telephony and telegraphy. Telephotography can be considered a form of telegraphy in many ways. In telephone work we are interested in many matters which you may not have in mind as telephone, as, for example, sound recorders, that is, devices by which sounds either right at the source of the sound or sounds which may be received over telephone circuits, are in some way recorded either on mechanical medium or on film or otherwise, so that these sounds can be later produced.

In testing circuits in the laboratory particularly, it is
146 necessary and it has been necessary in the past, to have groups of men, crews we call them, who talk over these circuits and then we have listeners who listen to these circuits,

and by recording various things, such as the judgment of the listeners as to loudness or recording the mistakes made by the listeners, we may judge the circuits. This has not been entirely satisfactory, because voices vary so much from time to time, so that we have in the last couple of years gone onto a system which is now in use involving what we call an artificial voice and ear proposition. Instead of a speaker it uses a phonograph record, and records can be produced entirely satisfactorily now. Of course they are always the same, so there is no variation, as is the case when we have human beings and this voice is sent out through devices which, for the purposes of talking into our instruments approximate the effect of the human mouth and we use that method in testing our circuits.

147 We have considered in quite a little detail and we have done quite a little work on a proposition that has arisen a number of times, which has in mind the use by subscribers of devices which record conversations, which go on over the telephone circuits they are using. That has not been used in the long lines. The only uses that I know of at the present time are in connection with certain power companies who are using it on, as I understand it, what they call their load dispatching circuits. It is my understanding that the control of the different stations supplying power is centered, for example, in some point, and if anything goes wrong, they want to be able to fix responsibility for the incorrect orders that may have been issued.

I have had nothing to do officially with electric phonographs for broadcasting stations. Some of our people make a particular point of keeping in contact with all the work that is done both inside and outside of the company, to see if there is any use that we can find for them in connection with our work or the work of the associated companies.

148 There are other cases of uses coming under those two categories but, so far as I can recall, the only two types of things for which we have considered these are recording in connection with telephone service and testing methods.

I have had no work to do with respect to the Victor Orthophonic Phonograph. I have had to do with television, as we are interested in the transmission of the electrical impulses which correspond to the pictures as they are transmitted over the wire. Also in connection, for example, with demon-

strations such as that which was made between New York and Washington on television, it was the people in my department who were responsible for the wire arrangements that were set up between New York and Washington and for the changes that were made in the lines to fit them to transmit these rather high frequencies. We have to distinguish between when it actively began and when there were ideas which were in the department because of either originating in the department or coming to us from outside. The active work on television was in comparatively recent years. I would estimate four years.

149 We kept in touch with every form of communication. Personally I have read articles and have had some interest in both picture and television, which grows out of pictures in a way, ever since I was in the telephone company as far as I can remember.

I cannot say definitely as to whether our division, up to four or five years ago, did anything about television except to read articles. It is almost certain that we did do a 150 certain amount of imagining or perhaps inventing. There may be patents that go back that far. In keeping in contact with these outside possibilities we always consider whether they have any application and it is not possible to determine whether they have some application without making some sort of a study but I think that our studies were, so far as I remember, not particularly formal prior to that time. I am not sure about that. It may very well be that we have in our files activities going back quite a bit prior to that date.

I do not remember any experimentation with television going back more than four or five years. Television was first used two or three years ago. Of course, the Washington demonstration was a demonstration of a system that had necessarily taken a considerable while to devise and construct.

I do not know how many years. That apparatus gets 151 back into the laboratory work and what they may have had there I don't know. That came under Mr. Arnold in the laboratories. I had contact with Mr. Arnold's work in the laboratory ever since he has been in charge of the work up there.

As far as my memory goes, that work on television had not reached the stage, either down here or in the laboratories,

where it had resulted in our discussing it with Dr. Arnold formally until about the date that I mention it as being an active matter, four or five years ago.

152 I have no distinct memory of informal discussions with Dr. Arnold. The only work that we have done on it prior to those discussions was a general matter of keeping in contact with all communication matters. I have no remembrance of any contact with any one relating to television prior to this time four or five years ago.

As to whether there are any records, if there had been anything that resulted in any formal contact, it may have resulted in a letter. If so, that would be in our files.

In our division we have a work classification at the
153 present time which we use and each of our people keeps a record of the amount of time he spends each day on each of those classifications. These records are by years. We do not classify them by projects. In times past we had work orders somewhat similar to the laboratory work orders. That was changed about five or six years ago. I don't know how long that system existed prior to five or six years ago. Such records as I have made are still in existence, so far as I know. Mr. Shepard or his department has them.

154 My division has done work upon radio, two types of work. Certain work has had to do with the stations themselves in so far as radio has led to stations; certain work has had to do with the question of starting the various radio cases, the originating of the cases, the authorizing of the cases which are similar, of course, to what we do in connection with other matters.

Undoubtedly our people have developed inventions concerning radio. I think an invention was made by one of our people on what we call the single side band system of radio transmission.

I believe there have been antenna inventions which our people have made.

Mr. H. A. Apfel is in my division. He has made a good many inventions, but I don't know of any inventions he made relating to radio.

I am a joint inventor of a system for controlling carrier or a standard frequency.

I know Mr. R. Bown. He is connected with my divi-
155 sion. I don't know of any inventions that he made. He

has been working on radios many years, but I don't have in mind the invention. I don't think any research work was done on his inventions. My invention or joint invention was limited to a radio wave—a standard radio wave which was received by radio stations, used as a basis. There has been work done on stabilizing radio stations by transmitted waves.

I believe, however, that that comes under other inven-
156 tions. It would be a patent matter as to whether my particular invention or some others bore on the particular systems. There has been work, however, on stabilizing radio channels by transmitted waves, transmitted standard frequency.

I don't remember who the other joint inventor of my invention was. He was in my division. I think the invention was made seven or eight years ago, I am not sure about that.

I know G. A. Campbell who made the filter invention and antennae array invention. On filters there has been a good deal of experimental work done. We did not do the experimental work on filters other than in the sense that when the development involving them gets out into the field, we take a part in the practical tryout, but I think what you have in mind is the laboratory function.

157 J. R. Carson is in my division in charge of a small group who do theoretical work largely, mostly mathematical; he has made the invention relating to radio—single side band method of transmission. I think he did some work on selective circuits, but I have no definite remembrance of any other invention of his.

There are about 125 men in my division. We have hired no men in the last year or two. I think we have lost one or two, perhaps three. I cannot definitely state whether the number has been larger than at the present time, perhaps one or two.

Mr. Colpitts is in general charge of Development & Research Department, A. T. & T. under Mr. Jewett. He has made inventions relating to radio but there was no re-
158 search work in my division respecting those inventions. His invention was a modulating circuit and the research work was done in the laboratories regarding that. That is the only invention of his I recall.

Mr. Espenschied is in my division and he has made a good many inventions. I don't recall any at the present time. I

would have to refresh my memory as to what development work was done respecting his inventions.

159 When inventions are made in my division I frequently have something to do with transmitting information respecting them to the Patent Department. However, they don't always come through me, they might go directly to the Patent Department, but they usually come to me for transmission in the form of a memorandum stating what the idea is. I do not personally keep copies of those memorandums but they are kept in the files of the general department, not of my division.

We have no records at the present time which I would say was a project record. Each case that is sent to the laboratories and authorized to go forward is covered by a letter and a copy of that letter is in our general files and then we have reports which our people make from time to time of the work that they are doing in different classifications; also,

160 many of those go into the general files but we have not a case classification, a project classification such as laboratories have.

We have records of everything of any size that go to the laboratories from my division. Projects or work performed in my division that do not go to the laboratories generally leads to bulletins for the field, and we have lists of such bulletins.

Our fellows have ideas that are turned down before they reach the stage of being sent to the laboratories. Some of our patents cover matters that have not resulted in

161 practical apparatus, but there is no attempt to keep a record of dead ideas. There is no record or list of all the projects that have been worked on in my division. The only list we have is this work classification which goes down in some of the divisions to fairly small matters, but below that point we do not go into individual projects. When we had some of these work orders, I don't know whether they were listed; I assume they were. All records are kept by Mr Shepard.

Our expenses are budgeted somewhat prior to the be-

162 ginning of each year. Our work is not budgeted. The work classification is the basis for that budget. The budget includes a number of factors. The first and the chief factor, of course, covers the men's time and on that Mr. Shepard sends to us sheets on which he asks us to put down

for these various classifications the expenditures we would expect under those classifications for the following year. He also asks for any estimates that we can make as to billings in connection with experimental work, but the big item is the men's time.

I don't know that I said anything about sound pictures. We have done no work on sound pictures. I am talking about my department now. Of course some use has been made of sound pictures by our publicity people, but there has nothing been done in my department on sound pictures whatsoever.

My division had to do with the development of some
163 of the principles upon which sound pictures are made.

Loud speakers are an important part of sound pictures and loud speakers have been a matter in which we have been interested. Our work on loud speakers in my division has been with respect to their application in the telephone service. In connection with loud speakers we had the same responsibilities that we had in connection with other matters in attempting to see what use they had in the Bell System and in the authorization of certain work by the laboratories on them. Our department has been interested in various demonstrations in which we have been responsible for the loud speaker phases of the demonstrations.

My contact with sound pictures has been largely in connection with hearing demonstrations of sound pictures and there have been loud speakers used in all those demonstrations, so far as I can recall, that I have ever listened to.

164 I had nothing whatever to do with the principles on which the Victor Orthophonic phonograph is based. The Orthophonic Victrola has nothing to do with telephony. I don't have in mind any work which we authorized which bore on the phonograph proposition which led into that orthophonic victrola.

165 I do not doubt that I employ the word "principles" frequently, but it is not a word that has any narrow meaning or any specific meaning. What we mean by it is generally shown by the context of the statement in which we use it.

As to whether there is any principle in any sense that I might employ the word used in telephony, I might say that electro magnetism was a principle used in telephony. It
166 is employed in telegraphy, in radio, and in certain types

of phonographs which we worked upon, that the laboratories have worked on at our request.

The phonograph itself was a mechanical phonograph
167 in which certain refinements had been made in connection with the reproducing apparatus. I do not know what you can put your finger on and say that was the principle of it.

Neither the A. T. & T. nor any of its departments supplied anything to the Victor Orthophonic Phonograph directly. The recording used electro-magnetic waves and there may have been some indirect contribution from the fact that we use transmitted speech in telephony and this recording used transmission of speech. I don't know whether the Victor Company has any arrangement with the A. T. & T. or any subsidiary of it.

There is nothing in my division that we know of as by-products. I have heard the word by-products used in connection with some of the devices that are sold by the
168 Electrical Research Products Corporation. Our only contact with them is that we make it a rule—some of our people make it a rule to keep in contact with every new device of that kind that is put out in order to determine whether there is anything there that might find a use in our work or in the Associated Companies' work. That is the only contact we have with the by-products. So far, however, as recording apparatus and loud speakers and some of these other matters you have mentioned, as I recall them, having a field of application in the Bell System, we are very much interested in them.

As to which one of the by-products I have had anything to do with in any wise, you have indicated the phonograph. I should say they are not by-products in so far as we are interested in them, but we are interested in voice recording, loud speakers or pick-up transmitters or transmitters in general. Those are the three things I have in mind.

169 As to any other by-products with which I have had to do, I would mention deaf sets to help subscribers who may be hard of hearing. Of course in voice recording I include voice recording and voice reproduction.

I only know what E. R. P. I. puts out by the fact that I see some of their products. Its largest production is on motion picture talking devices and sells phonograph devices of

various kinds for certain purposes. I have come in contact with its deaf set apparatus. That is all I recall now. The talking moving picture apparatus was worked upon in the laboratories or at that time the Engineering Department of Western Electric. My division contributed nothing to that direct. If there has been any contribution it has been
170 through the fact that we have contributed to the general telephone art. We have contributed to the general matter of better quality service, better quality telephone service and to what extent the laboratories may have drawn on anything that we may have contributed I haven't any information. We have been responsible for inaugurating certain work and I think undoubtedly some of our people have contributed definite features on amplifying devices.

171 In the application of amplifiers to a telephone plant there are many circuit arrangements and adjustments that have to be made. Our people have contributed a good deal in connection with those matters. For example, the matter of balancing lines which is an integral part of every repeater, I guess practically every repeater we have. Our people I know have contributed a number of inventions in connection with filters, electrical filters which are playing an important part in our telephone service in connection with carrier, radio, and such matters.

I do not have in mind any single instance where any invention arising in my department was used or embodied in any of the by-products.

The contribution of amplifying devices to talking motion pictures was of considerable importance. As I understand the talking motion picture, the recording as it is taken off of the film is amplified considerably before it is used to actuate the speaking devices.

172 My division had to do with repeaters. We have had to do, first, with the originating of many of the cases, many of the developments that have been carried out and we have had to do a good deal with the application of these repeaters in the plant. We have had to do with the writing of bulletins to furnish information so that the Associated Companies could use these repeaters to the best advantage in their plants.

The particular case of developing a hearing aid for telephone users, the general case was handled by the equipment

people, but we acted as consultants with them and with the laboratories on the amplifying device that is used in connection with it. The stethoscope was not one of the hearing aids nor were audiophones.

My division has had to do with testing apparatus for submarine cables. There has been work giving a great deal of attention in the last few years to a telephone cable to Europe
173 to permit a telephone circuit all wire from the United States to Europe. In connection with that work there have been tests carried out of various features, such as noise, for example, on experimental cables. There have been tests carried out in the laboratories on artificial cables. We have been, of course, interested in all of those.

My people have not had any large part to do with the particular testing apparatus used, although they may have suggested some features of it and then kept in general
174 contact with it. My people have used such testing apparatus on the cable from the United States to Cuba. Other tests I have in mind were almost completely made by laboratory men.

There are a good many things which the Bell Telephone Laboratories or the Western Electric has developed in the telephone field as a result of work in my division. By telephone field I mean the business of the Associated Companies.

175 Most of the work that I have connection with is too complicated to permit you to put your finger on one part of it and say that that is the thing that led to a certain result. In every case there are a lot of contributors to this thing, and furthermore, these various contributions are so many that they become submerged, in general, in our consideration of a thing, and we do not think of these things as being John Smith's thing or somebody else's thing. But my department has contributed undoubtedly, surely, to every big job which the department has had contact with. For example, long cable circuits, including what we call four-wire cable circuits, application of repeaters to open wire plant, carrier telephony and telegraphy, in both open wires and cables, sub-station apparatus, program transmission over telephone circuits. In each of these cases, you will understand I am not mentioning them because in all I have in mind a specific element con-

tributed by a particular man in my department, but because they are all the big matters on which they have been actively employed. I think we can go ahead with the list.

176 Radio, telegraph, echo suppressors, automatic gain control devices, telephone and telegraph testing apparatus. These include, of course, repeaters that we have mentioned as parts of them. I think that covers the thing broadly. Of course we could break such matters as long cable systems down to parts and enumerate some of these parts.

I would also include telephotography. Television, however, is not in commercial use; also I would include voice recorders, but I think our people have contributed some thoughts to that. As to whether I would include talking pictures, I would say that is much less likely as our inventions are more likely to come from the question of the application.

In the voice recorder I should imagine our suggestions or our inventions would come in the applications which have been considered rather than in the physical recording or physical reproducing itself and it seems to me unlikely that any suggestion that has come from our people has gotten through in the talking motion pictures.

177 The thing I definitely have in mind with respect to amplifiers are the application devices which fits them into the telephone system, that is, the artificial line arrangements and the filtering arrangements. Stripped of these application devices, that is, the pure amplifier, as such, is almost wholly a laboratory proposition. Now it may very well be that some of our people have made suggestions that have helped in connection with such amplifiers, but the amplifying device itself is pretty largely, almost wholly, so far as I now definitely have in mind, a laboratory development.

We have used what I assume you call public address systems in various ways, and it may be that some of our people have made suggestions in connection with that. I have not in mind at the present time anything that definitely is incorporated as a feature in public address systems.

As to the records in my department of work done, we
178 have not gone below the classification. Radio, of course, is a main classification, but under "radio" you will find sub-classifications, such, for example, as "ship-to-shore" and "trans-Atlantic" and a number of classifications of that kind.

Below that, however, we do not go with a definite routine. The individual job, as I understand it, would be covered by correspondence. There is always a definite organization
179 letter for that to the laboratories. There is no formal list of cases below these divisions that I use.

Mr. Blackman: There is a sheet made up every month and summarized every year of the expenditures of the Department of Development and Research, which divides the work into 19 main divisions and each of those divisions is divided into two or three subdivisions, which will give you the work broken down into more than a hundred different classes. For instance, take "radio," there are probably, as I recollect it, ten or a dozen divisions of radio, as Mr. Blackwell stated, such as "ship-to-shore," and this, that and the other
180 thing, under radio. Now, I have some of those sheets and I have had one or two of them enlarged, because they are made very fine and are hard to read. If you would like those sheets, I would be glad to let you see them.

We have given to Mr. Wray some books that contain
181 lists of projects, I think they are by number.

Mr. Blackman: You can have anything that does not disclose certain matters that we are working on at the present time. Of course, Mr. Haight, as a patent attorney, will understand that matters that we have in mind at the present time, we do not desire to announce to the world, what we are working on.

Mr. Haight: And we do not wish to pry into those matters at all.

Mr. Blackman. We will be glad to give you a list of all the projects except those, and any book that contains no project of that kind, we will give to you, and if a book contains a project of that kind we will take it out and indicate that we have taken out the project, because it was of that character.

Mr. Goldstein: Will those that you take out cover all the activities of Electrical Research Products?

Mr. Blackman: I don't know what they are working on.

(Discussion off the record.)

Mr. Blackman: Where we have a number of dollars (I heard you mention that to Mr. Haight), where we have a number of dollars spent each year, we break that down into some subdivision.

Mr. Goldstein: The number of dollars you spent in each department, have you got those covered in those projects?

Mr. Blackman: Not for Mr. Blackwell's department, but we have it for the whole D. & R. Department.

The Witness: There is no separate budget for my di-
182 vision, and I am surprised if Mr. Morehouse testified that he had. There is no budget by divisions in my department. In making up the departmental budget, we furnish Mr. Shepard an estimate of how much money we think we shall want to spend in each of the classifications and it goes down to sub-classifications,—in each of those sub-classifications, we advise how much we shall want to spend, but we don't go below those classifications.

DR. FRANK B. JEWETT, for the defendants:

184 *Direct Examination by Mr. Haight.*

I reside at Shore Hills, New Jersey. I am vice-president of the A. T. & T. and president of Bell Telephone Laboratories, Inc.

I was graduated in 1898 from Throop Polytechnic Institute of Pasadena, now the California Institute of Technology, with the degree of Bachelor of Arts in Electrical Engineering. I received the degree of Doctor of Philosophy from the University of Chicago, in physics, in 1902, and was research assistant under Prof. A. A. Michelson; that was in 1901 and 1902.

185 I was instructor in physics and electrical engineering in the Massachusetts Institute of Technology from 1902 to 1904.

I entered the employ of the Engineering Department of the A. T. & T. in fall of 1904, but a year or so subsequent to entering that employ I became transmission and protection engineer of A. T. & T., which position I held until spring of 1912, when I became assistant chief engineer of Western Electric; I became chief engineer of Western Electric in 1916; its operating vice-president in 1922 and in 1925 I was transferred to my present position.

The Development & Research Department of the A. T. &

T. was organized about middle of 1919, but I am not very clear on that because I was not with the A. T. & T. at that time.

186 From 1907 on, all the laboratory work of development and research for the Bell System was carried on in the Western Electric in its Engineering Department and that was substantially of the same nature as those which are now carried on by Bell Telephone Laboratories, which is merely an outgrowth of the Engineering Department of Western Electric.

The Western Electric carried on in its engineering department all of the physical development on the problems which were presented to it by the Engineering Department, A. T. & T. and in addition it carried on, on its own behalf, such problems—the research and development of such problems as had to do with articles of its own manufacture, in which the American T. & T. and the associate companies were possibly only indirectly interested. By that I mean research and development to cheapen the cost of apparatus which was then standard, which kind of work could be undertaken by a manufacturing department without reference to its customers, provided it did not change the character of the apparatus to be furnished. It undertook fundamental research work at the instance, largely, of the American Company looking to the development of new, fundamental information which was applicable in the telephone business. It undertook the de-

187 velopment of new central office and substation apparatus and equipment and the circuits which were used in the telephone and telegraph business and it investigated materials which were employed in the construction of that kind of apparatus. It investigated such things as cable structures, telephone cable structures, in fact, it undertook research and development work on the physical side in everything which pertained to the communication business.

That would include such subjects as transmission equipment in so far as it related to physical things as distinguished from the operational types of investigations which had to do with the use of things. Western Electric during those years substantially did not do any work of the character done now by the Development & Research Department, A. T. & T. From 1907 on, work of that type has always been done in either the

Department of Development & Research or in its predecessor, the Engineering Department, A. T. & T.

188 Prior to 1907 the set-up in the Bell System was somewhat different. The American Company had laboratories of its own in Boston and the Western Electric Company, the manufacturing part of the Bell System, had laboratories both in New York and in Chicago, and in those laboratories it conducted somewhat in parallel some of the work or work of a similar character to that which was done in Boston, but in 1907 at the time the Engineering Department of the American Company was removed from Boston to New York, the whole scheme of research and development work in the Bell System was reorganized and all of the physical or laboratory work was concentrated in a single laboratory in the Western Electric's Engineering Department in New York and all of that part of the work which related to contact with the associate companies on the development of new things or in the study of fundamentals from a theoretical standpoint was concentrated in the Engineering Department, A. T. & T.

It would not be exactly true to say that the Engineering Department, A. T. & T. took over in 1907 the Development & Research functions theretofore performed by Western Electric.

It retained all of the functions which it had had for many years prior to that, but did take over that part of a similar work which had been done in the earlier days in the Western Electric.

189 In the very early days the associate companies were in direct contact, with regard to new things, with the Western Electric as well as with the American Company with the result that there was a certain amount of development work on physical apparatus which was carried on by the Western Electric as a result of its direct contact with the associate companies without much reference to the American Company, but about 1907 it had become evident that the best interests of all the associate companies would be served by concentrating the consideration of new things so as best to serve all of the interests, including the Western Electric, which by that time had gotten into the position where it was manufacturing a wide variety of things, almost identical, but not quite, because of the different way in which the require-

ments had come up to it.

A large part of the problems going to the Western Electric then came to it from the Engineering Department, A. T. & T. That goes far back of the time when I first came into the business, but I should imagine from the early times a large part of it went directly to it from the A. T. & T. Prior to 1919 the A. T. & T.'s problems from long lines and from Bell subsidiaries went to Western Electric for solution through the Engineering Department, A. T. & T.

190 I might qualify that to this extent, that with regard to specific orders for equipment, if there were minor problems involving variations from standard equipment, those might appear first in the Western Electric because they were the recipients of the orders, but the solution of those problems even at the time you are mentioning involved consideration by the Engineering Department, A. T. & T.

The Bell Laboratories, Inc., was organized at the beginning of the year 1925. Broadly, it carries on all of the work which prior to January 1, 1925, was carried on by the Engineering Department of Western Electric, and it conducts the Research and Engineering work for the Bell System as a whole, including the A. T. & T. and the Western Electric.

191 The Department of Development & Research, A. T. & T. is charged with the responsibility, the primary responsibility for the Bell System for providing new and improved things or methods for the Bell System. In carrying out that work it is charged with the responsibility of studying the needs of the associate companies as those needs develop through their growth and the growth of their business. It is charged with the responsibility of keeping in touch with the progress of science and engineering generally, not only in the Bell System, but throughout the world, and where physical things are required, of formulating the requirements to be submitted to the Bell Telephone Laboratories for solution in the laboratories. The Department of Development and Research maintains no laboratories. It is charged further with the responsibility of keeping in touch with the development work as it goes on in the laboratories and at the conclusion of a development project, specifying whatever service tests may be required and finally of approving of the thing which has been developed, to meet the requirements that have been

set up, and when it has approved those things, of doing the necessary acts to make them standard in the Bell System and of furnishing to the associate companies, through the Department of Operation and Engineering, all necessary
192 information which will permit the associate companies and the Long Lines to order this equipment and to operate it when it has been installed.

The new and improved things that I mentioned include new and improved things for all parts of the Bell System. The new and improved things that are finally approved, if they involve physical things, find their way into the Western Electric either for manufacture or for supply. Some of the things involve physical things which the Western Electric does not itself manufacture, but which it does supply to the associate companies on order. An example of that is power machinery. The Western Electric does not manufacture power machinery but it does supply power machinery to the operating units of the Bell System.

Development & Research Department, A. T. & T. has nothing whatever to do with originating ideas in relation to so-called by-products. The ideas that are developed by Development & Research Department, A. T. & T. come from the
193 world of science and engineering generally. They come from common knowledge which is derived from publication of scientific work or the less common knowledge which comes through the contact which we maintain with operating communication units throughout the world or with scientific laboratories throughout the world. They come from the needs of the operating units of the Bell System as the need for new things develop and we learn of them either through our direct contacts with the operating units or more generally through the Department of Operation & Engineering, which is in very intimate contact with the associate companies. They come also from the general knowledge of the telephone business which the members of the Department of Development & Research, who are acquainted with all phases of the physical side of these things; they come also from the new knowledge which is developed through the physical research work in the Bell Telephone Laboratories itself, which new knowledge very frequently suggests new applications or new methods of applying knowledge to old things. I think those,

in general, are the main sources of the problems as they develop in the Development & Research.

For the most part the men in Development & Research Department, A. T. & T. are, and probably to a larger extent than in almost any other department of the system, college or technical school graduates. They are trained scientists
194 or engineers. Some of them come direct from selection from graduates, from the great universities and technical schools, who have entered the department immediately on graduation either with their baccalaureate degree or their advanced degrees. Some of them have come from the other departments of the business. The operating companies—operating units and I think in some cases a few have come from the laboratories. In all cases, however, they are men who are selected because of special qualifications for the kind of work which has to be done here.

In general, except for the men who come directly out of college, they are men who have had training and experience in some particular line.

195 I doubt if there is any single place where you could say that you could get the most information of the development work of the Bell System over the past. The system is too vast, and the kind of things are too diverse to be assembled in a single repository. You must realize that you are dealing with an organization involving hundreds of thousands of people engaged in all kinds of problems. So far as the physical needs are concerned, knowledge relating to the underlying principles and to the structure of those things I presume you could find most of them in the Department of Development & Research and the Bell Laboratories. When you come to operational methods and things having to do with the daily conduct of the business, I presume that the Department of Operation & Engineering, A. T. & T. would be as good a repository as you could find. When you come to matters of detail of constructing the physical things, it would be the Western Electric. But there is no central
196 repository in which we attempt to concentrate the essence of our knowledge of this business.

In general, E. R. P. I. handles the kind of things which you referred to as by-products, the things which are not directly a part of the operational functions of the Bell System

as a communication company, such things as talking motion pictures and odds and ends of physical equipment which have a use both in and out of the communication business, and I think they handle also the relations with organizations in and out of the United States, on certain things in the communication field, such as submarine telegraph cables. That is not quite a by-product in the sense that I first defined it,—it is in the communication field, but it relates to business which is not particularly of the United States.

E. R. P. I. handles also phonograph recording apparatus in so far as it relates to the use of that type of equipment outside the Bell System. I think Graybar handles public
197 address systems. That is really communication apparatus, the kind which is used largely by the associated companies, but it has a use outside of the operation companies.

I don't know about the details of E. R. P. I.'s handling electrical phonographs for theaters or for broadcasting stations. E. R. P. I. also handles picture transmission apparatus at different times in so far as it is related to sound pictures. I think they handle nothing connected with straight motion pictures.

E. R. P. I. also handles cathode ray oscillographs, which is a measuring tool, and it has some utility wherever it is desirable to examine the character of alternating current circuits, college and university laboratories and other electrical laboratories. It may be handled, however, by Graybar, but it is a by-product type of thing which may be handled
198 by E. R. P. I.

Telephotography is used wholly within the Bell System and it is of relatively small use.

Television is not a practical thing. It is still very much in the development stage.

I do not think E. R. P. I. handles radio. I think that is done through Graybar. Graybar handles the vending of communication apparatus in a non-Bell field. For instance, telephone cable as used by railroads is handled through Graybar. Deaf set apparatus is handled through Graybar. The small
199 amount of interest which we have in radio through broadcast transmitting sets we have handled through Graybar, and I think the public address sales are through Graybar.

I know of no by-products, things which have come out of our general work in the broad field of communication but which are not of a communication nature, which are handled through Graybar.

The Department of Development & Research has been interested in the development of vacuum tubes and their application, in the sense that vacuum tubes are a very powerful and valuable tool in the communication business, but as I have indicated before, the Department of Development & Research, having no laboratories, its interest in the development of vacuum tubes and the things in which vacuum tubes can be used is not in a position, nor does it do physical work looking to the development of those things. But many of these by-products which we have been referring to, do involve vacuum tubes, and in the sense that the Department of Development & Research has had an interest in the proper development of vacuum tubes, to that extent you might
200 say they are involved in the by-products.

The vacuum tube because it is inherently based on physical principles which make possible enormous amplification without distortion, is at the heart of all amplifying devices, and distortionless amplifying devices have made possible loud speaking telephones such as are used in public address systems, and more recently in talking motion pictures.

Talking motion pictures, as a matter of fact, in the sense that we now know them, were an impossibility until a satisfactory loud speaking telephone came into the picture. Most people I think have an idea that the problem was a problem of synchronization of sight and sound. Actually the problem was primarily a problem of the loud speaking telephone to get a sound which was comparable with the sight which one got through one's eyes. In the very early days of experimentation, years and years ago, on so-called talking motion pictures, you might have a life-sized picture but a miniature voice, so that it would fail to give the sense of reality which is required for successful talking motion pictures. Now, the success, whatever success there is in the present talking
201 motion pictures, in the last analysis, goes back to the character of the amplifying device and the loud speaking telephone and also to the character of the record which starts

the energy through the train.

The idea of the telephone repeater as a useful tool in the telephone art is almost as old as the telephone itself. It involved the idea of revivifying weakened current from a local source of energy and doing it without distorting the thing which you amplified. Until the vacuum tube appeared in the field of our scientific knowledge as a distortionless instrument, all of the attempts to make telephone repeaters were confronted with the difficulty of this distortion characteristic. All of the early attempts, and they were in some cases fairly successful, because of the extreme ingenuity of the men who worked on them, involved essentially the
202 principle of an ordinary telephone receiver actuating what was, in effect, an ordinary telephone transmitter, which was supplied by local energy, but the best of those instruments all introduced a considerable amount of distortion, so that while you could amplify the energy on the far side of the telephone repeater, the character of the current, of this amplified current, was not a mirrored image of the thing which was put in at the initiating side.

When the present thing which we call the vacuum tubes came in the pictures, as a result of scientific research the picture changed, because there was given into our hands the embryo of a device, which could produce as much energy as we wished to employ without substantially affecting the character of the currents which we put in to control it and consequently it became possible to begin real constructive work on the development of telephone repeaters, which would do one of two things. Either they would very greatly extend the range of circuits of an existing character by revivifying energy as it became too small to be usefully employed or, conversely, they provided us with the means of reaching between two more or less distant points with smaller and cheaper types of physical connecting circuits. Now, that same characteristic which was so valuable in the telephone repeater art and which has made possible such a wide extension of local and long distance telephony is identically the prin-
203 ciple which is required in much of what is known as radio transmission, both at the transmitting station and at the receiving station. At the transmitting station this ability to amplify without distortion, and another characteristic which

the vacuum tube has of permitting you to mix things together, to modulate one kind of current by another kind of current, finds its use in taking very weak currents and raising them to the enormous powers which are required at the sending station; at the receiving station, as we all know from the radio sets we have in our houses, which enables us to take infinitesimal small amounts of energy and control considerable sources of local energy whether from batteries or electric light circuits and produce through the loud speaking telephone a sound which can be heard by one or many people and which is substantially the same sound which was spoken into the transmitter at the distant transmitting station.

Telephone and long distance lines are used in broadcasting in two general ways,—they are used in what are known as pick-up circuits, namely, the circuits which connect the place of origin of the thing to be broadcast with the transmitting station,—a banquet in some hotel is to be broadcast, the sound of the speaker's voice is picked up by a special
204 high quality microphone and, if necessary, is amplified to whatever level you want at that point, and is then transmitted over telephone wires to the central studio of the broadcast station, where it is amplified—if it is a broadcast station, it is amplified to the desired degree and put out into space through the antenna. Every pick-up which is distant from the broadcasting studio itself is conducted over wires of the telephone plant.

The telephone plant is used also to connect the studio if it is remote from the transmitting antenna itself, with the transmitting plant. Then in addition to that, modern broadcasting, which we all know, involves frequently chains of stations, broadcasting stations on the same or different wave lengths scattered over the length and breadth of the land and telephone circuits are used to connect all of the transmitting stations into a common distributing point.

The Western Electric manufactures equipment used in connection with radio which is used in the Bell System for transmitting or receiving telephonic speech by radio. It also manufactures and sells the transmitting equipment for broadcasting stations. One other thing, it manufactures and
205 sells to the United States Government and to the other departments of political government, radio equipment.

It does not manufacture radio broadcast receiving sets for the home.

So far as the Bell System is concerned, the Western Electris sells direct just as it does any other kind of equipment. Broadcasting transmitting equipment is sold through Graybar.

The sale of this type of equipment—communication equipment through Graybar, is the natural outgrowth inherent in the history of the Graybar Company itself, the Graybar Company having been originally the non-associate part of the Western Electric. Originally these things, before Graybar was formed, were sold by the non-associate part of the Western Electric Company.

Western Electric sells none abroad and I do not think it manufactures for sale abroad. It is barely possible that the International Standards Company may occasionally or-
206 der something from the Western Electric, but the Western does not sell abroad in the sense of dealing with the ultimate consumer. Certain of the equipment which has been used at the distant terminals of telephone circuits, which radiate from the Bell System in the United States, has been manufactured by the Western Electric.

New apparatus or improvements in apparatus or inventions or processes contributed by Development & Research since the beginning of 1923 include many of the things that have gone into the more recent developments of new
207 central office equipment or the bettering of the older art.

The same applies to sub-station equipment, for example, such things as the hand set which has come into quite common use in that period. The development of all forms of repeaters for both voice frequency circuits and carrier current telephone and telegraph circuits. Equipment in the field of telegraphy, particularly in connection with the machines, the printing machines which are used on telegraph circuits; the switchboards which are involved in the newer forms of the switching telegraph circuits. Types of telephone cable, either to provide larger numbers of circuits within a given sheath diameter or circuits of a special character; devices to ameliorate the objectionable effects of interference of one sort or another; radio equipment in so far as it is designed to improve the possibilities of utilizing radio, such things as elec-

trical filter devices which were needed to give improved transmission through apparatus or other circuits. There are probably a lot of other things that I do not happen to remember.

208 The two groups, the Department of Development & Research, A. T. & T. report to me as the vice-president of the A. T. & T. The Bell Telephone Laboratories report to me as its president. They are essentially part and parcel of a single organization in which there are no overlapping functions but co-ordinated functions. Primarily, the work of Development & Research is to formulate the problem which has to be solved physically in so far as it relates to the business of the Bell System. In doing that it studies every condition that it can find which has a bearing on the formulation of those requirements. If the problem is one that arises out of the developing needs of the associated companies, it seeks its basic information very largely in the requirements which give rise to that need. It may be that the problem,—it may be a specific case arises from a stated need in some one associate company. Two things are done either directly by the Department of Development & Research or indirectly through the Department of Operation and Engineering, first the specific need at the point of origin is studied, and second,

209 the whole field of the Bell System is surveyed to determine whether similar needs, possibly not identical, exist throughout the system, all with a view to having whatever is done as generally applicable as possible. In addition to determining through its own knowledge, the knowledge of its people and through contact with other departments of A. T. & T., its preliminary consultation with the laboratory people and, if need be, with the Western Electric, to the extent that contact is through the laboratories, attempts to find out by their studying the requirements whether there are physical limitations to the probable accomplishment of its desires. Having formulated finally the problem to be solved and having satisfied itself that the problem is one which can be solved and which should be solved, it then states the requirements for physical things to the laboratories in what you might call a form of a specification. The laboratories then takes it —it becomes the sailing directions for the laboratories' organization which has the physical plant to carry on the ex-

periments, and they proceed from that point to develop the physical things which meet the requirements of the user and in carrying out their part of the [redacted] the laboratories make use of all the machinery [redacted] their disposal in-
210 cluding their ability to con[redacted] Department of Development & Research and [redacted] to contact with the Western Electric which, if it [redacted] thing, will ultimately have to be manufactured by [redacted] the end that when they get through with their part of the job, the answer will meet two conditions, first it will meet the condition of service as outlined through the Department of Development & Research and, second, that it will meet the condition of being susceptible of manufacture.

The expenses of operating in the Bell Telephone Laboratories, Inc., are charged in general to cases which are taken out to cover specific things which are undertaken. The expenses of operating the laboratories are paid by its three customers; they are the A. T. & T., Western Electric or E. R. P. I.

By specific authorization generally in advance of the undertaking of the work from the party to whom the ultimate bill is to be rendered, it is determined which of the three
211 should pay. The laboratory is run at no profit and at no loss. The expense which is incurred by the laboratories is made up of these parts: The actual salaries or wages of the employes, the cost of material which is used or equipment which is purchased and which is specifically allocable to definite cases is charged to those cases. The general expenses of administration and the corporate expenses are covered by loadings which are applied to the direct expenses which are allocable to the work which is done, so that at the end of the year the total out of pocket expense of the laboratories from every cause is covered through the billings to one or the other of those three people.

There are really three kinds of loadings which appear in the making of the cost. One is a departmental loading which takes care of the salaries and expenses of administra-
212 tion within the division of the laboratory itself which cannot be very well allocated specifically to jobs. Then there is the commercial loading which is the cost of general administration within the laboratories, the charge for the

cost of the plant which is employed, stenographic services, heat, light, water and what not that are common facilities that are provided to everybody and finally there are the corporate,—what you might call the corporate loadings, taxes, etc., those general expenses which are a part of the whole thing. Those things are apportioned to the different departments and through the departmental loadings become loadings on the individual kinds of work as far as possible, in proportion to the values or to the benefits of each kind of work in participation in the whole.

What I had in mind when I made that statement was this: In the Bell Telephone Laboratories we have a group which is essentially a manufacturing group. All the vacuum tubes which are used in any part of the Bell System organiza-
213 tion are manufactured in the laboratories. That is because being very new and as yet a somewhat unknown kind of thing, that type of manufacture has to be carried on very closely in contact with the research people, but in figuring the cost of jobs in what we call our tube shop, the loadings there are not the loadings of the group which is working as research people on vacuum tubes. It is a lower—when the plant is running at full capacity it is a lower loading in so far as general administration is concerned. In times like this, when that particular manufacturing operation is at a relatively low ebb, this departmental loading, which results from a large amount of equipment which is devoted wholly and solely to that, may be somewhat high, higher than it was a couple of years ago, but that function is performed as nearly as we can in an organization like ours as though it were a manufacturing rather than a research and development organization.

Any vacuum tubes that are used in connection with the business of E. R. P. I. are manufactured in this same tube shop. All of the tubes which are employed by any part or portion of our business are manufactured in that place
214 and that place only. The vacuum tubes which may be used by E. R. P. I. are manufactured on order from Western Electric.

The loadings are apportioned, as best we can, over the activities of the laboratories for the character of the work which they do. In so far as there is variation,—as there may be variations in the loadings of this department as compared

with that department, then that portion will be reflected in the billings to the customer. Take an extreme and absurd example of two departments where for some reason the loadings are somewhat different, and assuming that all of the work of one department is for one customer and all the work of the other department is for another customer, then the loadings would be different as between the customers, but if the work is distributed roughly over the entire group, then each customer gets its share of the loadings in proportion to the amount of work which it has done.

215 Bell Telephone Laboratories, Inc., have a Patent Department which procures patents for Bell Telephone Laboratories and for other organizations in so far as by matter of request of the Patent Department, A. T. & T. or Western Electric, by patent searches or preparation for interference cases or things of that kind. In general, however, it is maintained wholly and solely as an integral part of Bell Telephone Laboratories organization to do these things: To secure patent protection for the new things which arise out of our research and development work; to make the necessary searches to enable us to advise the A. T. & T. and Western or E. R. P. I. that the thing which has been specified for use is free of probable patent infringement. It is operated just as any other department of the Bell Laboratories is operated as an integral part of the machinery of research and development.

216 If in the inception of the idea there is invention of a patentable character, the patent goes to the man in the Development & Research Department who conceived the idea. If, however, the inception of this thing, which is ultimately going to result in a patent, is a broad inception of a kind such as I may make, but the invention occurs through the process of carrying out that idea, then the patent goes to whoever it was that made that patentable invention. In other words, we do what the law requires us to do, we try to find who was the inventor of the thing which is patentable.

When the inventor is one in the Department of Development & Research, A. T. & T. in general it is handled in the Patent Department, A. T. & T. It may be handled on request of Mr. Folk's department by the Patent Department of the Laboratories if they are in a better position to go through

the machinery, for example.

217 The Patent Department of the Laboratories is by far the largest patent group which we have in the Bell System and in some branches of our activities notably in the central office, the switching type of thing, they are far better equipped to handle the matter of preparing specifications and carrying the patents through the Patent Office than is the Department, we will say, in the A. T. & T. It may be that in some cases of an invention made in the Department of Development & Research relating to that field, to actual mechanical work, the legal work which is required to carry that through the Patent Office is turned over to the Patent Department of the Laboratories. Conversely, if an invention is made by some one in the laboratories in a field where Mr. Folk's department is better equipped to handle it, the matter is turned over to Mr. Folk's people.

In the case of work that is done in the A. T. & T. Patent Department no billing is made to anybody. In the case of Laboratories Patent Department, since all of our expenses have to be billed somewhere, the actual cost of taking out patents as distinguished from the work which the Patent Department does in consultation with people during the progress of work, the actual cost of patents, taking out patents follows the patent. Ultimately the patents are assigned

218 out of the Bell Laboratories. The Laboratories is not a patent holding or a patent operating organization. A patent taken out on work which is done in the Laboratories is merely a part of the work of development and research and ultimately assigned to either the A. T. & T. or Western Electric and as I remember it, the cost of the actual patent taken out follows the patent. It is paid for by Western Electric if the patent goes to Western Electric. It is paid for by the A. T. & T. if the patent goes to the A. T. & T.

Conceivably a problem may come to the Bell Laboratories from Western Electric which developed material of patentable novelty during the course of its solution, but the patent may be in the field of patents which are owned by the A. T. & T. because, by long existing contract, certain kinds of

219 things are Western Electric and certain kinds of things are A. T. & T. In that particular kind of thing the patent would ultimately reside in the American Company and the

American Company would pay the cost of taking out the patent.

All of our requests are made by Western Electric, by A. T. & T. and by E. R. P. I. We may know and probably do know in specific cases what the genesis of that thing was but they are not put to us in that form, but rather as a problem for the Graybar Company, this is a problem for Western Electric. We have no relations with the Graybar Company in the same sense that we have relations with the other three.

220 Some of the materials used in the Bell Laboratories are purchased from Western Electric.

In the case of apparatus of Western Electric manufacture, we pay the associate price, the same price that any other part of the Bell System would pay for that material. In the case of raw materials which we buy through the Western Electric Company, we pay the same price that any other part of the Bell System would, under whatever contracts the Western Electric Company has for purchasing that sort of thing. In other words, we may make use, just as any other part of the Bell System does, of the Western Electric Company's general purchasing contracts wherever we can. Of course, there is a considerable amount of stuff, incidental stuff, which we buy directly from outsiders.

Frequently we have work that runs over a great many years before it results in anything commercial or any-

221 thing that is used. Take a very simple, specific example.

A good many years ago, telephone cables, the ordinary lead-covered cable which is so familiar to all of us, had the wires in it insulated with wrappings of paper, made out of old rope. The purpose of that insulating material was to keep the wires apart and a fundamental requirement for the best cable was to have as little mechanical material as possible between the wires and to have it of a character which would produce less energy losses in the cable. The best material that we knew of for that purpose was essentially cellulose, wood or vegetable fibre, and such as used in making paper, and the way in which we applied it, because we had to apply large quantities of it at a very low cost, was to have these fibres made into paper and cut into ribbon and the ribbon wound on the wires in a crumpled form. Because of the mechanical stresses applied to the ribbon in the process of winding it on the wires, the paper had to be extremely strong.

This resulted in limiting the source of paper to paper made out of long fibre material and so inherently expensive. At various times suggestions were made and trials undertaken to use shorter fibred material such as wood pulp, which was as good from an electrical standpoint. All of these failed, however, because of the lack of mechanical strength. A considerable number of years ago someone suggested that since all that was required in the final product was a proper amount of properly distributed fibre around the wires, there was no necessity for going through all of the elaborate operations of paper making, that the paper might be formed directly on the wires, thus eliminating all of the actual processes in paper making, slitting and winding, and producing an end result identical with that theretofore obtained. This idea was so promising that work was undertaken for its practical development. Because of the many difficulties which we found to reside in forming a uniform layer of paper directly from pulp on the wires, this work extended over a large number of years and has only recently come into the realm of practical application. It extended, I should say, not less than 10, in that order of magnitude. That is not an unusual example.

We have at the present time a considerable number of problems on which we have been working for many years and on which the work is not yet completed. Probably the most striking example of what you have in mind is found in the hand set which has come to be used commonly in the last two or three years. That problem, to my own knowledge, has been worked on assiduously for more than 20 years and has only recently come to a satisfactory solution, and the reason for it, for this long period of time, is found in the fundamentals on which the Bell System has built up its nation-wide plant because hand sets have been in common use in foreign countries for many years. Our difficulty in that particular case resided in the basic idea, which has been the fundamental of Bell System transmission development since long before my time, namely, that the transmitter and the receiver which are attached at the sub-station shall be each of the highest possible efficiency and of the highest degree of uniformity. Now, when you have a very highly efficient transmitter and a very highly efficient receiver and supply energy to the combination of the two as you do through a central or local bat-

tery, you have an arrangement which has a very great tendency to vibrate in its own natural period. If the transmitter and the receiver are brought into juxtaposition anyone who has tried the experiment with the ordinary desk set on a station which is not far distant from the central office, of putting the receiver in front of the transmitter knows what happens, the combination starts to howl and the higher the efficiency of the transmitter and the receiver the greater is the tendency to howl. In European systems where hand sets have been used for a long period of time, the difficulty, this howling
224 difficulty, is obviated by making the transmitters and the receivers inefficient, but in our case, because we have built up a vast system on the desk set basis with the highest possible transmitter efficiency and the highest possible receiver efficiency we were estopped from using that solution. We had to have a solution which gave us a transmitter and a receiver, at least as efficient each as the transmitter and receiver of the desk stand, otherwise the introduction of the hand set would produce an immediate degradation of the service of everybody who uses the telephones, but when we came to try to put a transmitter and receiver together, with a rigid connection through the handle, which could transmit vibrations from one to the other and maintain them to at least the same efficiency of the desk stand instrument, we produced an instrument which had a very great tendency to howl. Further, since the hand set can be used in more positions than the desk set was usually used microphone transmitters of the type which were entirely satisfactory in the desk stand were found to have positional effects, so that if one were lying in bed, for instance, and attempted to use the hand set, he might have a very different efficiency out of his instrument, and it took us many years to solve that physical problem satisfactorily and produce an instrument in the
225 convenient form of the hand set, which would have the efficiency of the instrument, of which there were millions in use, without introducing this deleterious effect of howling or the equally deleterious effect of position which affected both transmission and affected the signalling over the circuits. As far as I know, that is the most striking one of the cases.

The failures are relatively few because of the way in which the work is conducted. What seem to be good ideas when they

are initiated but which have only the inherent elements of failure, in general are caught long before they reach
226 anything like a final stage. Either they result then in an abandoned experiment in its initial stages, or what is more usually the case, if the original idea was good but the reasoning at the start, because of lack of information, was faulty, the course of the development which was originally thought to be along this line is modified to another line and the end result is maybe a little different from what was preconceived, so that our failures in the ordinary sense are very, very few and I have no figures of percentage.

Quite a good many years ago when we were attempting to extend the length of open wire circuits, particularly in large gage wires through the mechanism of loading, the application of the Pupin loading coils to lines, the question of the insulators supporting line wires became a very important factor because the standard glass insulators as we then had them, through leakage and electrical loss in the insulator itself, produced a very deleterious effect on the transmission, and we sought to find a new and better type of insulator.

227 In this country glass was the standard which had been used for decades for insulating electrical wires but abroad we knew that they were,—particularly in Europe, that they were using porcelain and we made quite a large number of studies on porcelain insulators and came to the conclusion that porcelain insulators would give us much better results than glass insulators.

We ran into one difficulty at the start due to the relatively high labor costs in this country, which precluded the machining of porcelain parts, insulator by insulator, as they did in Europe, consequently the insulators had to be made, if they were to be used, within a reasonable cost by machinery processes, but that seemed to be a thing which we could get over because the porcelain manufacturers were already manufacturing high quality porcelain insulators for high tension lines and we finally through our elaborate laboratory tests arrived at the conclusion that we could make a very material benefit through the use of porcelain and that we could get a porcelain insulator of the character we wanted at a price which we could afford to pay and we embarked on the process of equipping some lines, quite long lines, with those porcelain insulators. At the start they were extremely good, but we neg-

lected, through lack of knowledge, to take account of the
228 bugs, insects, and we found after the first summer that because porcelain insulators were opaque and not transparent or translucent they were particularly sought for nesting places for bugs and that there were more bugs nested under the petticoats of porcelain insulators than under the petticoats of the transparent glass insulators, with the result that at the end of the summer all of the advantages of porcelain insulaors had disappeared in thin air and we were worse off than when we started, so we abandoned the use of porcelain insulators and started looking for something else.

The directors of the Laboratories are Mr. Bloom, the president of the Western Electric, Mr. Stoll, the operating vice-president of the Western Electric, and Mr. Hosford, the vice-president of the Western Electric, in charge of manufacture. Mr. Bancroft Gherardi, the vice-president in charge of operation and engineering of the A. T. & T., Mr. E. H. Colpitts, the assistant vice-president of the Research and Development Department, Mr. H. P. Charlesworth, the vice-president of the Bell Laboratories, Inc., and myself, seven of us.

229 The reasons for the organization of the Bell Telephone Laboratories, Inc., in 1925 were two essentially. First, that the laboratory function, as it was then carried on in the Engineering Department of the Western Electric had grown to such proportions in size and in character of work that it had outgrown the confines of a department of a subsidiary of the American Company and had attained to the stature of an associate company. That was one reason; and the other reason was, that as long as that very important function in the development and conduct of the Bell System remained a part of the Western Electric, a manufacturing organization, which was supplying material to operating companies, which were public utilities, the active direction within the organization of that function could not be vested in an officer of the American Company. I don't know what the law is, but under the general law, which was promulgated years ago with regard to railroads, it seemed very desirable that because it was primarily responsible for the conduct of research and development work, that an officer of the American Company should be the active director of the Laboratories.

Prior to that time, my predecessor, General Carty, as the head of the department Development and Research, while

the titular head of the department, was not in actual con-
230 trol of the laboratory functions. So that reason, and the other reason brought about the formation on January 1, 1925, of the Laboratories as a direct subsidiary of the American Company in a form which permitted the vice-president of the A. T. & T., in charge of development and research to be, in his own proper person, the active executive of the Laboratories.

Without any change the personnel of the Bell Laboratories was on January 1, 1925, the same personnel that had been the Engineering Department of the Western Electric on December 31, 1924.

The Laboratories' researches in the physics of sound resulted in developments that produced the orthophonic phonograph.

It did result in the development of measuring devices, which were thought to have some possible application in the prospecting for oil, and I am not sure but what certain small pieces of apparatus may have been turned over to organiations in the petroleum industry for their use.

At one time, it was proposed that we should undertake to do that sort of work by one of the large oil companies, because of the knowledge which we had in the field, which they
231 thought would be of advantage in this prospecting business. But on a scrutiny by us, it appeared that that field was one so far removed from the normal field of our activities that it was not a proper field for us to embark on, and we never did embark on it.

Out of the work of any group—a large, organized group, such as is this laboratory, many applications outside of the specific field in which they are primarily interested, would be conceived.

Vacuum tubes as manufactured by the tube shop, operated by the Laboratories and for the account of the Western Electric, are used outside of the Bell System in such things as the services of the Army and Navy of the Government, where they involve communication,—radio or wire communication; they are used in the amplifying parts of Public Address systems, which may be sold to hotels or auditoria, playing
232 fields or what not, wherever Public Address systems are used and they are used in the electrical parts, particu-

larly the amplifiers of talking motion picture equipment, as it is manufactured by the Western Electric and transferred to the E. R. P. I.

The work on vacuum tubes began in the latter part of 1912 and has continued uninterruptedly since, in ever increasing amount, as is usually the case with any new and very useful tool, and the end is not yet anywhere nearly in sight.

The Development and Research Department of the A. T. & T. themselves did no physical development work, but they did a vast amount of study leading to the requirements for new and improved vacuum tubes, and in the testing of the final product and in the development of the applications of their use; but having no laboratories, they had never carried on work in vacuum tubes, in anything like the sense that people in laboratories do.

(Recess.)

(For deposition of George E. Folk, see Abst., Vol. IV, pp. 1211-1230.)

251 JOHN G. ROBERTS, for defendants:

Direct Examination by Mr. Haight.

I reside at Dobbs Ferry, New York; I am patent attorney, Bell Telephone Laboratories, Inc., and have been since January 1, 1925, the date of its organization. Prior to that I was assistant general patent attorney of Western Electric, from 1909 to end of 1924.

My department handles the patent matters for the Laboratories. After the patents are secured some are transferred to Western Electric and some to the A. T. & T. and others have not yet been assigned where the studies have not yet been completed as to which company it should be assigned to.

None go to E. R. P. I. Patents whose inventions are
252 embodied in products sold by E. R. P. I. are assigned to Western Electric in some cases and in others they go to the A. T. & T.

As to those not assigned at all, we have not examined any of the patents issued during the current year for the purpose

of determining their disposition. As to those issued prior to this year, we classify some of them as telephones and some as telephonic appliances and in accordance with the definition in the 1882 agreement between Western Electric and the A. T. & T. Those classifiable as telephones have been
253 assigned to the A. T. & T. and the others to Western Electric. The remainder group have not yet been analyzed sufficiently to determine their classification, but they are assigned under the principles I have stated, regardless of who may be the inventors.

Occasionally I handle patent matters relating to inventions made in Development & Research Department, A. T. & T., and later worked upon by the Laboratories, and that comes about by specific request of the A. T. & T.

When an improvement invention has been made in the Laboratories, that is handled by my department. Then the question of to whom the patent is to be assigned is disposed of, as I have stated.

Patents on vacuum tubes generally go to the A. T. & T. I do not know of any subject matters upon which employes of the A. T. & T. have made inventions where the patents have been assigned to Western Electric. It is my understanding, for instance, that if an invention related to switchboard is made, the title to the patent would remain in the A. T. & T.

If the inventions are made by employes of the Bell
255 Laboratories they are taken out and assigned to the Bell Laboratories at the time the applications are filed. Later on they would be disposed of in the manner that I have before stated.

We make recommendations with respect to foreign filings in most instances and our recommendations are generally followed by E. R. P. I. which files, in some cases, in foreign countries. There are certain other foreign patents taken out by the International Telephone & Telegraph Company pursuant to certain agreements made with that company and there are certain patents taken out by Northern Electric Company in Canada. Certain foreign patents are taken out in the name of Western Electric on our recommendations. I am thinking of some in South America and some in Canada and Newfoundland.

256 Assuming, for example, that an invention is made by

an employe of the A. T. & T. and then in the Bell Laboratories improvements are made upon that, as in the field of the movietone, and patents are secured through my department, those improvements patents are disposed of in accordance with 1882 agreement or remain in the Laboratories for future consideration. They may go, as I have above mentioned, to Western Electric or the A. T. & T.

FRANK W. JEWETT, recalled:

Direct Examination by Mr. Haight.

Dr. Craft, in the Bell Laboratories Record, Vol. 1, at
257 page 96, says:

"In the conduct of this work it has always been the aim to study broadly the problems of communication, paying attention not only to the electrical problems of telephony but particularly to the physical problems of what speech is and the mechanism by which we hear speech or music. In the last 12 to 15 years the results of our investigations have pyramided and now we have a fund of scientific knowledge and a technique which is largely responsible for our present day telephony over wires and much that is fundamental to the present radio broadcasting art."

258 This publication appears to be in November, 1925.

259 I have no quarrel with the statement in that paragraph. I see that the paragraph is one of an article of some three or four pages, five pages, headed "Sound Recording and Reproducing." I have not read the remainder of the article so that I am simply taking the statement as it appears in that paragraph out of its context. But so far as that paragraph is concerned, I have no quarrel with the statement that is made.

In that same Volume I of the Bell Laboratories Record, page 195, I notice the analysis of each dollar expended in what appears to be the 1928 program. I have examined the chart. This indicates that 71 per cent of every dollar which appears in the Bell Laboratories accounts goes to salaries. I should say that that was a reasonably fair thing. Actually

in my own thinking I have carried in mind a higher fig-
260 ure for salaries,—roughly, of the order of 75 per cent of our entire expense, in the salary classification.

In Volume 2, which is bound in the same cover, page 67, there is an article that appears to be by Amos F. Dixon. I have read that which is part of the paragraph of an article entitled "Development of Communication Systems" and as a statement for that article I have no question on that, that is, systems of communication, and I think that is correct. That is to say, the requirements for systems originate in the Department of Development and Research or come to the Laboratories through the Department of Development and Research. That is only a part of the paragraph and I have not read the rest of the article. The part to which I have referred reads as follows:

"The requirements which each development must meet
261 are obtained by the laboratories from the Development and Research Department of the American Telephone & Telegraph Company, and in final analysis arise from the field and operating requirements, both present and future of the Long Lines Department and the associated companies. To these requirements, the Systems Development Department adds its views and past experience."

Volume 2, page 200, is an article by Joseph P. Maxfield. The first paragraph of that article refers to a contract. I know that a contract was entered into between the Western Electric and Vitaphone but I am not familiar with the terms of that contract.

The interest of the laboratories in this work—that is, the making and reproducing of moving pictures with accompany-
ing synchronous sound records that is referred to—is an
262 outgrowth of the development theretofore made of electrical processes of recording, the fundamental novelties of which were logical applications of the theories and the technique incidental to Bell System problems of transmission of speech and music.

In referring to phonograph records, there have been, as I recollect it at the moment, without having refreshed my mind in detail, three principal values to the telephone art of this work: One in the accumulation of knowledge with regard to what can be done in the way of making permanent records of

telephone speech over regular telephone circuits looking to the possibility of sub-station recording devices which the subscriber might use in keeping a record of his own and his correspondent's conversations.

263 In the second place, we have had a very great interest in the development of very accurate and very fine phonographic records as a tool in the study of telephone equipment, telephone apparatus and telephone circuits.

To explain that particular interest it is necessary to realize that what we are dealing with in the telephone business in the last analysis is the production of electrical impulses which are mirrored images of the spoken word, evidence of those electrical impulses or re-transmission into sound impulses and finally their transmission into the ear of the distant party, and the one thing that we are dealing with is the fidelity with which the spoken word at one end of a telephone line is conveyed to the recipient at the distant end of the line.

Every instrumentality that is involved, from the first instrument opposite the speaker's lips to the last instrument before the orifice of his ear has an effect in affecting to some degree the characteristics of the vibrations as they issue from the speaker's mouth, and it is of the utmost importance to us to be able to determine how far each and every part and all of the parts act to modify the spoken word, because beyond a certain point, no matter how much energy you may supply to the receiver, if it was not in the form of intelligible

264 speech the telephone conversation would be useless.

Now, for many years, since we are dealing in the last analysis with speech and hearing as they are evidences of human characteristics, the ability to transmit and reproduce has had to be measured against a human standard. For many years the only means that we had of measuring the goodness or badness, the ultimate goodness or badness of a particular piece of apparatus, a particular system, a particular combination was from the process of making actual speech and hearing tests, but human beings differ among themselves with regard to the goodness or badness of their speech and hearing, and each individual varies from time to time, depending upon his condition, so that those tests were difficult to make to the desired degree of uniformity which is essential for a final development, and the only way in which we could pro-

gress by that process was by the,—what you might call the statistical method, by the making of enormous numbers of tests, involving the same individual in many repeated tests and many individuals in many repeated tests and from a statistical analysis, getting an impression. To whatever extent we can insure that the impulses given to the initial apparatus, the transmitter, are accurate and duplicable we have improved the value of our tools, and as a phonograph
265 record, in so far as it is indestructible, is a permanent record, which can be used over and over again with a knowledge that the initial impulses are identically the same. It is of value.

To that extent it is of very great importance to us as a tool in the development of the telephone art, so that we have had a very great interest in phonograph records from that standpoint.

There is a third use which has developed and which is of extreme importance in the telephone art of the present day and in which all of our work on phonographic reproduction whether by means of the ordinary disc type of record or the film type of record has been of very great value in the telephone business, and that is this: It has to do with the operation of the dial system of telephones, the common dial system in the day-by-day giving of service to the public.

When we injected first the dial system into the telephone business we injected a mechanical means of passing orders into a system which had been developed to very large proportions around the passing of orders by word of mouth from the subscriber to a human being, the operator, who carried out those orders. We introduced in the dial system a means by which the subscriber's orders were passed by an operation of his finger instead of his lips and since we could not change the system, the entire system of the United States over
266 night, from a manual system to a dial system, but had to make the introduction in gradual steps, we had to have a scheme of operation which was usable in connections from dial telephone to dial telephone, from dial telephone to manual telephone, from manual telephone to manual telephone and from manual telephone to dial telephone.

In so far as it is possible to do it the operation of a subscriber at a given station, in getting the desired number, must

be the same, irrespective of what kind of station that distant station is. The subscriber has no knowlege other than the number which he finds in the telephone directory. He cannot be supposed to know the intricacies of the mechanisms by which his orders are carried forward. In other words, his operation must be the same irrespective of what kind of telephone his correspondent may have or what kind of a central office he may be connected to.

In the case of the manual telephone, which he had been accustomed to using, he passes his orders by word of mouth, he knew nothing further than that he gave those orders to some human being, and in a great majority of cases, except where errors, either of his own making or somebody else's making interposed, he got the distant desired number or he received a busy signal or a don't answer signal and that had to be the case after the dial was introduced. If he was
267 one of those who had a dial telephone he dialed the number, he said nothing until he got the distant party after he dialed the number and in due course he got the distant party. If his call was over a dial telephone connected to his own exchange or to another dial exchange in the same city the whole thing went through as a mechanical operation. If, however, the party that he desired to reach had a manual telephone, then at some stage of the game a human being, a human switch had to appear in the picture and this mechanically dialed order had to be given to that human being.

In the early systems, the very earliest introductions of the dial system that ordering was done by what was known as a carriage call. The dialing of the number by the originating subscriber set up in front of an operator at the distant station the number of the desired party. The operator received, through a lamp signal, an indication that a call was coming in on a particular trunk and then in front of her appeared a series of numbers, for example, 1, 2, 3, 4, which indicated that the call on that particular trunk was destined for station 1, 2, 3, 4. She got that number through her eyes and she plugged the end of the trunk into the desired subscriber's line.

In large offices, very large offices, it may be possible
268 to segregate the operators into two groups, one group to handle incoming calls from manual offices in which they received the numbers in the ordinary way from the

distant operator by word of mouth, through their ears, and another group who receive orders only from dial originating stations, and all of their orders came in the form of these call indicating affairs, but it is not always possible to segregate operators in that way, particularly in the smaller or outlying offices where only a small fraction of the calls originate at dial offices and in consequence the operators at those places have to perform their functions of making this last connection under the guidance of orders which came in in two different ways; one set of orders came in through their ears and another set of orders came in through their eyes. That is, the first are those which originate at manual stations and the others came in through orders which originated at dial stations. In other words, it put a double burden on the operators and an obstacle in the carrying on of efficient and rapid telephone switching, so it became apparent at a very early stage that if we had some way of translating those finger dial impulses into the spoken word at the distant station, then the operator at the distant station need know no more about the origin of the call than the subscriber himself knew about
269 the character of his correspondent's telephone, and in the modern machine switching central office areas there has been developed and is being used with increasing amount of phonographic type of apparatus by which, at the distant station, the dialed impulses which are designed to connect the line to a manual subscriber are translated, through a phonographic apparatus into the spoken word; the number arrives in the form of a set of impulses which, in the older system, would have set up the number 1, 2, 3, 4, but actually what happens is that they are passed to the operator in the form of the spoken word, 1, 2, 3, 4. Except as she may be able to distinguish between phonograph 1, 2, 3, 4 and a spoken 1, 2, 3, 4, she has no different kind of orders whether the call originated at a manual office or whether it originated at a dial office, and she consequently performs her functions with one simple guiding rule to tell her what to do. She does not have to use her eyes in the completion of any of the calls except in so far as she has to see which jack to plug the plug into, but she gets her orders through her ears in all cases. In some cases they come to her through a word spoken into a microphone which goes directly into a telephone receiver. In oth-

ers, they come to her through the impulses which start by the subscriber's finger but end up in her ears in spoken words.

Now, the extent to which, and the ability which we
270 have of making that final spoken word as nearly as possible like the human spoken word, the more efficient is the system, so that we have had a very great interest in phonographic reproduction in any form for that purpose. Those are three very important ways in which we have been interested in phonographic reproduction and very accurate phonographic reproduction.

The knowledge required in that development has been useful in the phonographic art disassociated from telephony, and, conversely, the information which we have gained in our work on the phonographic art has been of inestimable value to us in the carrying out of our development of those lines, as I have described. Our Research and Development in respect to phonographic records has been practically applied to phonographic instruments, outside of telephony.

Our initial work in the phonographic art *per se* came as a direct result of our work in the telephone field. Our sub-
271 sequent work in the telephone field has been largely influenced by the work which we have done in the phonograph art.

In the present stage of scientific and engineering knowledge, the only known way of producing what is known as a television image is to make use of the property of the
272 human eye, the retentive property of the human eye which makes motion pictures a possibility. This property, which results in the impression of continuity of motion being sensed by the brain, if the succeeding images are sufficiently close together but of moderate duration which is that 1/16 of a second that we hear so much talk about.

Making use of that property, all developments of television in the present state of our knowledge are in fact technical modifications of a single process, which is to view the object to be transmitted a very large number of times in successive small increments which viewing is in an orderly fashion across the whole image and to view the image with this multiplicity of scannings, at least 16 times a second, and transmit the electrical impulses which result from that process to the distant points and there reassemble them. It is, in effect, to

take a plane surface and string it out into a line, making use of the fact that you have a 16th of a second to do this kind of a thing in, and then at the distant end of the line re-transpose one-dimensional space into two-dimensional spaces. That process, by whatever means of scanning or by whatever means you reproduce, in so far as the electrical impulses are concerned, result in what are in effect currents of very high frequency, and whenever you have currents of very high
273 frequency you thereby have a wide band of frequencies that you have to deal with in your transmission system, whether it be by wires or whether it be by radio, so that there is a limitation in the transmission of television images which inheres in conjunction with the band.

The bands are very, very much wider over a circuit, whether it be wire or whether it be radio, over a channel which is capable of transmitting high frequency current and which is capable of transmitting a television image, over that same circuit you could transmit many telephone messages and very much larger numbers of telegraph messages and as the goodness of the television image goes up toward perfection, the width of the band increases, consequently the number of possible telephone messages or telegraph messages increases. Of course, it is not possible in the present state of the art to produce or to reproduce,—leaving out the transmission part of it,—television images of the goodness of motion pictures, that is, quite irrespective of the transmitting channel; but if it were possible to produce at the sending end the electrical currents corresponding to the perfect scanning,
274 and at the transmitting end to reproduce those in a perfect image, the width of the band would be a wide band.

Television is a transmission of intelligence of a kind, just as telephony is a transmission of intelligence of a kind or telegraphy is a transmission of intelligence of a kind. They are not the same kind of transmission, nor is the intelligence which they transmit identically the same in the two cases. In that sense, they are different arts.

In the sense that they involve the same kinds of apparatus, the same kinds of the circuits, the same laws governing the transmission of currents, they are part and parcel of the same art and there is no sharp line of demarcation between the things and from the standpoint of the development of the telephone art, viewed narrowly as the transmission of speech

between human beings, knowledge gained in the development of the circuit requirements for television plays a very important part, for the reason that anything that we learn with regard to the characteristics of circuits which will transmit this wide band of frequencies is immediately applicable in
275 the art of telephony because it automatically gives us the possibility of obtaining over a single channel a multiplicity of telephone channels of the narrower art.

They are certainly different, but how different is a pure speculation which resides in one's judgment of how far the television art may go toward the production of perfection and how widely that can be distributed to people who may want to use it, but I will say this, that in so far as the economics are involved in the cost of the transmission channels, then you must say that the television art is a much more expensive art than the telephone art.

On account of their work in that field, the most outstanding one, who has devoted a considerable part of his time to the development of television and what is closely allied to it, the thing that we talked of yesterday, telephotography, is Dr. Ives. I suppose he is the most outstanding man in the world in that particular field. He is essentially a man,—even before he came to us,—who was skilled in the photographic art and he has devoted in recent years a very considerable part of
276 his time to the development of telephotography and television.

His work on television goes back certainly five years and possibly six or seven, at the outside. The fundamentals on which systems of television are based are very old,—40 years old. It is only within recent times that those ideas have had any possibility of practical application, through the advance of general science.

277 Improvements of things that are old and new both—the most outstanding one that occurs to me at the moment in which a very great advance has been made in the last ten years, that is, an advance which has influenced all of the longer distance telephony,—I would say all telephony over a very few miles in length,—has had to do with improvements of the loading coils which are an integral part of every circuit of more than the very shortest lengths, and that improvement has grown primarily out of our fundamental work to develop new magnetic material.

Originally loading coils were made which were magnetic affairs, coils of wire wound around a magnetic core—were made on magnetic cores which were composed of the fine iron wire. They were large and they were expensive and they took up a large amount of space in the manholes or on the poles on which they were installed and they had certain disadvantages. In our endeavor to find a magnetic material which was better than iron wire, we were led first to the making of these cores out of powdered electrolytic iron, each
278 particle of the powder being properly annealed and properly insulated and then pressed into a form under enormous hydraulic pressure. That resulted in improvement in quality, reduction in size, and reduction in cost. Then in our further endeavor to get improved magnetic materials, we developed what were known as permalloys. They were alloys of magnetic materials which in the condition of magnetic fields as they are in the telephone and telegraph art, have very remarkable magnetic properties,—very many times more magnetic than the best iron and steels of the older art, and the iron dust loading coils which had been a great improvement over the iron wire coils have been superseded by cases in which the magnetic coils are permalloy or alloys of the permalloy type and they are very small coils, much less expensive than the older coils, occupy very much less space and in consequence are used in very great numbers. That work has progressed enormously in the last ten years. In fact, I think that the whole supersession of the earlier coils in new installation by permalloy has taken place in that period of time. There have been very great improvements, of course, in the efficiency and economy of repeaters. There have been very great improvements in the development of electrical filtering devices, those devices which enable us to confine the frequencies that we are interested in, within defined limits and
279 thus make possible not only better quality but make possible the putting of more circuits over single channels.

There have been very great improvements in the development through the use of vacuum tubes of electrical filters and our general knowledge of the way to combine these things in what is known as carrier systems of telephony and telegraphy by which you multiplex a number of channels of telephone or telegraph over a single channel.

There have been substantial improvements in cable during

that time in two directions, one in the direction of making possible the use of smaller wires and so more circuits in a given area; and second in the arrangement of those wires in the cables. I spoke yesterday of the improvements with regard to insulating material.

There have been decided improvements in toll boards. That art, as I understand it, is, however, one in which the improvements were in the nature more of refinements on existing things and the provision of added facilities to enable more rapid and more economical operation.

Improvements in the local switchboards helped in the
280 long distance service very little, I think, except in so far as the same apparatus is used in all kinds of switchboards; improvements in plugs, jacks, cords and relays is common to the entire switching business, so that whatever is done to improve individual pieces of apparatus primarily for one service, if it is a real improvement, finds its use in all other similar kinds of switching.

The carrier system means—all forms of telephony, even the common or garden variety of telephony is a carrier system in a way, that is, in the telephone transmitter you superimpose alternating pulsating current on a direct current, a current of zero frequency if you will. To that extent it is a carrier system. In the things which are commonly referred to as carrier systems the current on which you impose the fluctuations of the spoken word is itself an alternating current of a constant frequency and what you do by the process of imposing those things is what we call modulating; we
281 modulate the frequency and in the process of modulating, which is what you always do when you mix two frequencies together, when you make one frequency affect another frequency, you initially end up with three things in the output side the residual of the carrier on which you have loaded this thing, and two things which we call side bands which are groups of frequencies above and below the carrier frequency, which have a width equal to the width of the frequency of the spoken word and which are merely the frequencies of the spoken word added to or subtracted from the carrier. What you do by the process of modulating these high frequency currents is, in effect, to raise the frequency,—you can use either of these side bands or both, but in general one, because there is no object in using both. In many cases it

simply means a duplication of energy. What you do when you take one of these side bands, we will say the lower side band of a particular modulation is, in effect, to raise the frequency of the human voice from one level to another—the higher level, roughly the level of the carrier current. The frequency band which you get there, while it is as wide as the frequency band of the voice would be, is in most cases, unintelligible to the human ear and in many cases undistinguishable by the human ear, despite the fact that it has all
the characteristics of the frequencies in the lower band
282 and at the distant end of the line you do the reverse process, you take the carrier and reduce it to the lower level. Within the limits which are imposed by the width of the band of the human voice and the necessity to avoid interference, you cannot have those bands overlap in frequency without producing cross talk. You can theoretically put as many telephone channels over a given telephone circuit, over a given pair of wires as you can conduct high frequency currents over it. That is, if you took the entire theoretical,—if you took the entire range from zero frequency to x-million frequencies and if you can transmit those things non-interfering, you can have as many telephone channels as there are multiples of the width of band of ordinary speech on there. Theoretically, then, you can do an infinite amount of things over a given number of wires or any other kind of channel, radio or anything else over which you can conduct this frequency but practically you are limited by the elements of cost principally and complexity of apparatus and reliability of service of large magnitude because, in effect you are putting all of your eggs in one basket when you use one pair of wires to take the place of many pairs of wires between two corresponding points. But even leaving aside the question of reliability, the question of economics begins to run very shortly after you reach a reasonable number, not too large,
4 or 5 or 6, maybe a few more, superimposed channels
283 of telephony and maybe two or three times that number, of telegraph channels because telegraph channels are a little bit narrower. That element comes into effect because at the transmitting end, if you are going to have many channels, and at the receiving end, if you are going to separate those channels, you must have a very complex apparatus, particularly complex in the form of these electrical filters, which

allow only a particular group of frequencies to go through that filter and the question of complexity soon reaches the point where it is more economical to provide an additional channel than it is to provide the complex apparatus at the terminal ends, but theoretically you can transmit an enormous number of telephone and telegraph conversations over a given channel without interference.

"Given channel" means a pair of wires or grounded circuit,—if you are using a grounded circuit, as you do in the case of a submarine telegraph cable or a radio channel. Radio is not different from telephony or telegraphy, in the sense that telephony or telegraphy are different from each other. Radio is merely one of the many ways of conducting electrical impulses and those impulses may be used for a variety of purposes on radio as they are used for a variety of pur-
284 poses by wire, such as the transmission of power, telegraphic communication and telephonic communication.

The switchboards, in so far as they facilitate the operations of setting up connections, have had to do with an increase in speed of service, because of the development of new methods of handling what are commonly known as toll service and the elimination of operators permitting one operator to do what formerly took two or three in the built-up connection.

The carrier method was made possible by the vacuum tube because of the properties—the remarkable properties which we were able to develop in vacuum tubes, once the principle of those vacuum tubes was disclosed; the principle of distortionless amplification and the property of utilizing that device as a generator of high frequency currents and the modu-
285 lator of high frequency currents.

An article appearing in "Bell System Technical Journal" of January 30, 1930, entitled "Telephone Communication System of the United States," by Mr. Gherardi and myself, is a general article which represented the communication system of the United States at the time it was written, in so far as it had been developed to give local and long distance service within the United States. The main body of it
286 has to do with the regular national telephone service and at the end there are a few notes with regard to adjunct services where telephony is employed, such as telephony to mobile stations, ship-to-shore telephony, transmission of pictures, program transmission, and a few slight references to

by-product things which have grown out of our development work covered in two or three paragraphs.

It was presented to the World Engineering Congress at Tokyo, Japan, in October, 1929. I have not read the article since it was presented, and whether my views have changed in two years since it was presented, in any detailed point, I would have to read over the article carefully to see. So far as the general things are concerned, as stated there, my
287 views then expressed are substantially what they are now.

Mr. Haight: I would like to offer the whole article as an exhibit, subject to the right of the other side to examine the same in any way they may see fit.

Mr. Blackman: I object to it at this time, but as I say, in order to save time and avoid a multiplicity of questions, I would be glad to have Dr. Jewett read it and if he says now that he agrees with every line of it, then, of course, I will enter into a stipulation.

Mr. Haight: That is entirely satisfactory. If there are any limitations, Dr. Jewett can state what they are.

Mr. Blackman: That is just the point I want to develop, if there are any.

Mr. Haight: In the meantime we will refer to that as Defendant's Deposition Exhibit No. 1, merely as a matter of identification.

The Witness (continuing): Referring to a pamphlet purporting to be published by the Western Electric relating to No. 12—A Loud Speaking Telephone Outfit—I agree with
288 the following as of the time it was written:

"Recent developments in vacuum tubes and vacuum tube amplifiers have made it possible for the engineers of the American Telephone & Telegraph Company and the Western Electric Company to design what is now known as the No. 12—A Loud Speaking Telephone Outfit, a practical device that will successfully meet the severe conditions of railroad service."

I think from looking at this device, that this thing must have been written some years ago. It says 1/11/24. That statement undoubtedly referred to the fact that by the
289 development of the vacuum tube amplifier, we had placed at our disposal a tool for so amplifying ordinary speech current as to make it possible to reproduce it in a loud speaking telephone such as railroad requirements necessitated for

the guidance of tower operators and other people who could not use ordinary telephones and had to depend upon, if they used telephone at all, had to depend on loud spoken telephonic communication.

Referring to another Western Electric pamphlet—I agree with that statement except possibly in the implication there may be in it that that was a perfect final device. That was written seven or eight years ago. If I agree that that was a perfect final device, I would be agreeing with something that I do not believe now.

I will read it into the record.

"With the permanent place that radio has attained within a comparatively brief period in the daily lives of thousands, new standards have been established not only by those engaged in the design and manufacture of apparatus but by the public as well. Those who were once satisfied to get 'something' by wireless—no matter how weak or how imperfect the reproduction—soon demanded volume enough to fill a room; then that quality and naturalness of reproduction that make music and speech a real pleasure; and now there is demanded an efficient cabinet type of loud speaking telephone that will please the eye.

"This last requirement is met by the No. 14—A Loud Speaking Telephone Outfit which makes use of the latest developments in the electrical communication art and is mounted in an attractive and unobtrusive cabinet. It is a combined audio frequency amplifier and loud speaking telephone. When used as an adjunct to vacuum tube radio receivers, it provides amplification sufficient to make received radio programs audible practically without distortion throughout a large room."

291 Referring to a pamphlet marked "Speech Input Equipments for Use With Wire Lines as an Adjunct to Radio Telephone Broadcasting, Western Electric Co. published in U. S. A. 1925"—I agree with the statements marked on pages 1 and 3. I assume that the Western Electric at the time this pamphlet was issued did have these things available. The portions referred to are as follows:

"To provide means whereby events that take place in points remote from radio telephone broadcasting stations may be transmitted to the radio audience. Western Electric Speech Input Equipment, in a number of types, have been made avail-

able to meet practically any condition that may arise."

That was on page 1. On page 3 the following:

"One of the important requirements imposed by the companies of the Bell System, in order to avoid interference with other lines, is an upper limit to the power level delivered to the lines by the speech input equipment. The volume
292 indicator which is described below is an instrument which may be used to indicate the level put upon the lines."

The only qualification that I would make to that paragraph is that this word "events" in here must refer to speech events; it does not refer to visual events; it is a speech event.

The next pamphlet is one entitled "Amplifier No. 6034-A," bearing upon its upper cover also the legend "A Western Electric Product." The matters are the two appearing on the first page and I agree with them.

The first part is as follows:

"Western Electric Amplifier No. 6034-A. A development of Bell Telephone Laboratories, Incorporated, the Research laboratories of the American Telephone and Telegraph Company and the Western Electric Company."

Below that:

"To provide a means of making entertainment from phonograph records available in rooms of average size or in widely separated areas, some method of amplifying the entertainment electrically and transmitting it by the same means is required."

The next is a pamphlet, Western Electric Company No.
293 10-A, Loud Speaking Telephone Outfit, and I agree with the statements within the poetic license of the man who wrote this first paragraph as to what constitutes pleasure.

The portions referred to are as follows:

"Western Electric, No. 10-A Loud Speaking Telephone Outfit. The widespread interest displayed in the receiving of broadcasted news, music and entertainment by means of private radio telephone installations has brought with it a demand for certain auxiliary types of equipment. Foremost among these is the loud speaking telephone outfit which is capable of amplifying the output of a radio receiving set so as to satisfactorily fill a fair sized room with speech or music. In providing facilities for all members of a family group, for other gatherings, to enjoy the entertainment, the greatest satisfaction can usually be obtained by providing a good loud

speaking telephone outfit. The proper design of an efficient radio speaking telephone and its associate amplifier represents one of the highest achievements of the electrical and acoustical arts as they exist today. For several years past
294 the engineers of the Bell System, that is, of the American Telephone & Telegraph Company and of the Western Electric Company, have carried on extensive investigations upon the loud speaking telephone with the object of developing a wide variety of public address systems. On the basis of those investigations the Western Electric Company is manufacturing a loud speaking telephone outfit suitable for use as an accessory to a radio receiving set."

The next one purports to be a pamphlet issued by the Western Electric Company and bears upon its outer face the legend "The No. 2-A Audiometer, a Western Electric product." I agree with the statements marked except in so far as those statements imply that the audiometer was developed for purposes outside of the telephone business. The statements are:

"Western Electric No. 2-A Audiometer. A Development of Bell Telephone Laboratories, Incorporated, the research laboratories of the American Telephone and Telegraph Company and the Western Electric Company.

"The importance of accurately determining the acuity and quality of hearing in delicate functional and diagnostic exam-
294 inations has long been recognized. Taking advantage of the possibilities of the use of electricity in sound measurements and drawing upon its experience in designing apparatus providing electrical means for amplifying and transmitting sound, the Bell Telephone Laboratories has developed for the Western Electric Company several different types of Audiometers capable of meeting a wide range of requirements."

The audiometer was developed in its fundamentals primarily as a tool to assist in the proper development of telephone transmitters and receivers. It is essentially a device which permits of the accurate quantitative measurement of response of the human ear to frequencies over the entire range and in values within the range of the human sense of hearing. A knowledge of these fundamental characteristics of the human ear, both in persons of normal and persons of abnormal hearing, is absolutely essential to a proper develop-

ment of telephonic apparatus, particularly transmitters and receivers, and the audiometer was devised as a tool in the solution of a purely telephonic problem. The fact that it did give a means of measuring acuity and quality of hearing for other than telephonic purposes was purely incidental although of very great importance in the medical world and the instruments to which this paragraph refer were the reductions
295 to practical form for use by aurists of the apparatus previously designed purely as a tool in telephonic research.

The next pamphlet is one bearing upon its face the legend, "Western Electric Public Address Systems." I agree with the statements, marked on pages 3 and 5, with the same reservation as in the preceding question to any modifications that these instruments were designed primarily for the Western Electric.

My explanation is that the loud speaking telephone was designed primarily as an adjunct to the service of the Bell System to make possible the transmission at a distance the spoken word of orators or speakers in a distant place. The statement at the bottom of page 3 in reference to the Madison Square Garden exercises at the time of the burial of the Unknown Soldier is a very good illustration of the objective which we have in designing loud speakers for use in connection with the telephone plant and as in the case of the
296 audiometer, having designed loud speakers and employed them in the telephone plant, the usefulness of those same things for more local purposes led to the development of the things which are described, I presume, in this bulletin.

The parts referred to are as follows:

"Western Electric Public Address Systems. A development of Bell Telephone Laboratories, Incorporated, the research laboratories of the American Telephone and Telegraph Company and the Western Electric Company.

"Introduction. Ten years ago the Western Electric Company made available the first Public Address Systems to provide means whereby speech could be delivered clearly and faithfully to large assemblies of listeners, numbered in thousands instead of the mere hundreds, who formerly constituted the audiences within the range of full audibility.

"During this decade four Western Electric Public Address Systems were developed and introduced covering every commercial need that has arisen. Each of these systems was pre-

eminent in its class and generally selected where insistence was placed upon dependable, flexible and simple operating equipment with ample volume and clarity."

The next part of page 3 to which attention was called reads as follows:

"From the first large installation in old Madison Square Garden, where the audible services in honor of the Un-
297 known Soldier were reproduced in 1921 down to the present long roster, careful analyses have been studied, practical tests made and on the basis of the findings, improvements effected."

The part referred to on page 5 of this pamphlet reads as follows:

"Systems Nos. 5, 6, 7 and 8 still further enhance the value of Western Electric equipment because of the much larger areas it is possible to cover, the extreme simplicity and dependability of operation at all times, the perfect tonal quality of voice or musical instrument as transmitted alone or in combination, by the great advantage of A. C. operation by greatly improved loud speaker units and projectors and finally because of the important fact that design, workmanship and performance of each part which make up each system are based upon the Western Electric Company's and Bell Telephone Laboratories' knowledge, experience and reputation as pioneers and leaders in the field of sound transmission apparatus, as evidenced by the telephone and telephone apparatus that are the standard for the world."

With reference to the words "Is it available," in that first sentence, the Western Electric Company made available, and the observation is that available there refers to the Western Electric Company as a manufacturer of equipment and not as an originator of the idea of the development of a loud speaker, which was a problem that arose in the American
298 Telephone & Telegraph Company.

The next pamphlet is one which, upon its outer cover, bears the words "The No. 1-A Stethoscope. A Multiple Electrical Stethoscope," parts upon page 1 and on page 3 are further parts ending at the top of page 4. I find myself in a position not to make a categorical acceptance or denial of the statements, although in general as a piece of advertising literature I think the statements are substantially correct. On

page 1 the title is: "The Western Electric No. 1-A Stethoscope, a Multiple Electrical Stethoscope."

299 "Since its discovery by Laennec over one hundred years ago the stethoscope has proved indispensable in the study and diagnosis by auscultation of pathological conditions of the heart and lungs. It has long been recognized, however, that the stethoscope in its various forms has certain natural limitations and improvement has had to wait upon electrical research, development and adaptation."

As regards that paragraph 1, not being a physician, have no knowledge of the gentleman who is supposed to have invented the stethoscope, nor the time at which the stethoscope was invented, so I am not in a position to comment on that.

The next quotation is:

"The development of the vacuum tube amplifier gave rise to hopes that the stethoscope, purely a mechanical device, might be improved. Early experiments indicated that heart and chest sounds could be magnified and reproduced faithfully by electrical means but certain difficulties experienced with early forms of vacuum tube amplifiers had to be overcome before reproduction by this means could be made satisfactory."

I have no comment on that paragraph. So far as I know it is entirely correct. The next quotation is at the top of page 3:

"These difficulties resulted from the fact that the am-
300 plifiers were efficient at low frequencies and over-em-
phasized the higher frequencies. In addition, the combination of the ordinary telephone mechanism and an amplifier was shown to be impracticable inasmuch as the telephone employed a carbon transmitter producing noise which, when amplified with the body sounds, is annoying and tends to obscure the latter."

I have no comment with regard to that paragraph. It is a statement of fact, as I understand it. The next paragraph is:

"The elimination of these obstacles to the development of an efficient electrical stethoscope has been accomplished by research work carried on for a long period in the laboratories of the American Telephone and Telegraph Company and the Western Electric Company. Of primary importance has been the development of a special vacuum tube amplified. This

amplifier combines enormous amplification capacity with practically distortionless reproduction over the entire range of frequencies, of interest in auscultation. The development of a special electromagnetic detector or transmitter eliminated the difficulties inherent in reproduction by carbon microphones. The development of the electrical filter by the same research organization also made possible the suppression of sounds outside of the band of frequencies to which it is desired to listen."

My comments on that paragraph are that they first make clear that the research laboratories referred to at the
301 time this pamphlet was written, published in January, 1925, refer to the laboratories' predecessor to the formation of the Bell Telephone Laboratories, Inc., but more particularly they refer to the fact that the special vacuum tube amplifier referred to here is merely an outgrowth of the development of amplifiers for the same general purposes for use in the telephone business quite aside from any use in the medical field as stethoscopes. Our own problems required us to have, if we could have them, amplifiers which would do identically what is here described and they were developed for that purpose, and the fact that these same amplifiers, or slight modifications, were found to serve the purpose in the medical field is an incident rather than an objective in the development of amplifiers, and the same applies to filters.

This is the next quotation:

"These three basic developments, supplemented by study and research devoted to the producing of undistorted sound transmission and several years of work in collaboration with specialists in auscultatory diagnosis resulted in the solution of these important problems in the form of a multiple electrical stethoscope known as the Western Electric No. 1-A Stethoscope."

I have no comment on that last paragraph, which is a statement of fact. The application of the things devel-
302 oped in the telephone field to practical, useful forms in the medical field require the co-operation of the research, physical research people with the specialists in the medical field who knew what it was that they wanted to obtain, so that statement, as far as I know, is correct.

The last of this series is a pamphlet bearing upon its outer cover the words "Public Address Systems Nos. 1-A and 2-A

Western Electric Company." Parts on page 3 two instances and on page 5, one instance. I agree with those observations and statements except for a comment on the first paragraph of which I have no understanding, as to how long the need for this thing has existed. The author says 20 centuries. I don't know whether it is 20 or 40 or 100.

Except for that comment, I agree with those statements with the same reservation which I made,—same explanatory reservation which I made with regard to the preceding similar one on public address systems as to the origin of the need for those things, and this is purely a reduction to practice in more detailed form of uses outside of the purely telephone field.

The material to which attention has been called reads
303 as follows:

"Western Electric Public Address Systems Nos. 1-A and 2-A. The well known and widely used Western Electric Public Address Systems Nos. 1-A and 2-A have been designed to meet a need that has existed for twenty centuries but could not be satisfied until their advent."

The second occurrence referred to on this first page is as follows:

"The necessity for artificial amplification and direction of sound was obvious, so the research engineers of the Bell Telephone Laboratories, Inc., the research laboratories of the American Telephone & Telegraph Company and of the Western Electric Company addressed themselves to the task of developing a system of loud speaking telephones that would meet the need."

The parts on page 3 are as follows:

"The efficiency of this system was demonstrated during inauguration ceremonies of the late President Harding on March 24, 1921, when by its use an audience of more than 125,000 * * *"

March 24th? Well, that is written that way, but it is obviously a misprint.

"* * * by its use an audience of more than 125,000 people gathered before the National Capitol at Washington was enabled to hear distinctly the President's Inaugural Address."

The next occurrence on the page is as follows:

"Where the number 1-A public address system can h
304 used to amplify and project sound: In large audi-

toriums, stadiums, baseball and football fields, outdoor mass meetings or political meetings and announcements of election returns, armories, mines, steel mills and other large industrial enterprises, vehicular tunnels, steamship piers, to handle large crowds by police and fire departments, production of motion pictures, drill grounds and training camps, railroad and trolley terminals, large building and construction enterprises."

And the item on page 5 is as follows:

"Where the Western Electric No. 2-A public address system can be used: Hotels, for use in banquet halls, for reproducing music of an orchestra in as many locations as desired and for paging guests or making announcements in cases of emergency. Theaters and other auditoriums, stock market and trade exchanges, colleges and schools, for use in large lecture rooms, for emergency announcements, for directing class drills, dance halls, steamships, steamship piers, department stores, prisons, hospitals, county fairs, private Pullman car or automobiles so audiences assembled around them may be addressed."

I have here a bulletin of the National Research Council which is a subsidiary, if I can use that word, of the
305 National Academy of Sciences, which latter is the only nationally chartered scientific organization in the United States. It was organized just prior to the United States entry into the World War as a piece of machinery to be operated for the national good under the aegis of the the National Academy of Sciences and designed to provide for the mobilization of the scientific knowledge of the United States in all its fields, for matters concerned with the national defense, national welfare and the stimulation of pure and applied science.

It functioned during the war largely under specific Presidential proclamation as the scientific central scientific agency of the Government, and subsequent to the war it has functioned as a part of the National Academy of Sciences for the development of fundamental and applied scientific research.

In carrying out those functions in this present or peacetime capacity it operates through a number of divisions, representing roughly the divisions, the general divisions in the fields of pure and applied science, which divisions are constituted of representatives designated by the national socie-

ties in the respective fields and appointed by the National Academy of Science under the powers of its national charter.

306 Each division of the National Academy of Sciences has a chairman, not a permanent chairman, but one appointed for a number or a period of years, and always a very prominent man in his particular field who devotes his time during his appointment to the affairs of the Academy and he receives a salary for his services.

The chairman of the several divisions and certain members of it constitute the council of the National Academy of Science.

It occupies and is the joint owner of a very large and monumental building in Washington not far from the Lincoln Memorial, which was made available to it and to the National Academy of Science, its parent organization, through the munificence of one of the national foundations.

I was instrumental in the formation of the National Research Council partly because of my membership in the National Academy of Science and partly because of my activity in the general field of science: For a number of years I was the chairman of its engineering division but at the present time have no official connection with the National Research Council, although I am still actively interested in its work.

In connection with my chairmanship of the Engineering Division I would make this qualification with regard to
307 the statement above, the statement preceding, as to emolument, by saying that the Engineering Division of the National Research Council is different from any of the other divisions in that its chairman does not devote all of its time to his work nor does he receive any emolument, the emolument in the case of the Engineering Division being paid to a permanent officer who is known as the director of the Engineering Division and he receives the same salary as the chairman of the other divisions.

This peculiarity in the case of the Engineering Division arises out of the vast field to be covered by the division and from the fact that men of prominence in the engineering field, in general, are not available for permanent service even of a temporary duration, as chairman.

I find in the list of industrial research laboratories of the

United States appearing in this bulletin, the Bell Telephone Laboratories, Inc., and many other concerns.

308 Without having looked over this long list of industrial research laboratories, I would say that I think they are in three categories; they are the research and development laboratories of industrial concerns, manufacturing business, operating business for private corporations; they are the research laboratories maintained by associations of industries who do not maintain their own complete research laboratories but who have a sufficient interest in common fundamental problems and associate themselves together in the maintenance of a research and development laboratory, which does for the industry all fundamental problems with which our laboratory, for instance, does for us, such examples as the laboratory of the Tanners Industry and of the Canning Industry, who I think are probably in here, and also I think in this list probably are industrial research laboratories which are maintained in the research field in much the same way that consulting engineering groups operate in the engineering field. They are research laboratories fully equipped either in the general field of science or in specialized
309 fields which undertake to do for clients and for a fee, problems which are submitted to them and in addition, although I think that there are probably listed in this grouping institutions like the Mellon Institute in Pittsburgh, which is a privately endowed research laboratory, which will undertake to provide facilities in which the public in general, industries or individuals can maintain research men at their own expense to conduct specialized investigations.

I presume also that we would find in this list such national and state organizations as the Bureau of Standards.

On one of the pages, 27, ending on page 28, is given what I take it, to be a general summary of the work of the Bell Telephone Laboratories, Inc.

310 So far as I recollect, I had nothing personally to do with the thing. I was not at the time that this list was gotten out, officially connected with it. I will have to go back and qualify that statement back there. When I said I was not officially connected with it, I said somewhere that I was not officially connected with the National Research Council at the present time; as a matter of fact, that is not so; I am one of the members of the Engineering Division. So far

as I know, I had nothing whatever to do with this statement. It does describe the activities of the Bell Telephone Laboratories, Inc., as accurately as one can describe in a brief summary form, merely by listing a large number of things in which a laboratory such as ours would be engaged.

The book to which we have been referring is the bulletin of the National Research Council, No. 81, Industrial Research Laboratories of the United States, including consulting research laboratories, 4th edition, compiled by Clarence J. West and Callie Hull. Published by the National Research Council
of the National Academy of Sciences, Washington, D. C.,
311 1931. This is a reliable official publication of that organization. There has been given here many manufacturing corporations that have laboratories and I am assuming that their activities are described in a general way at least properly. The activities of the Bell Laboratories, Inc., and the activities of organizations doing laboratory and research work for these various manufacturing concerns as to methods differ not at all from the larger and more efficient research laboratories. In so far as that list may contain small organizations which are sailing under the name of research and development laboratories they probably differ very much with regard to method and the care which they exercise and the extent to which they go in the study of problems.

As to field, of course, our laboratory differs from probably every other one that is listed in that pamphlet in that our work is confined generally to the field of alternating phenomena whether on materials or sounds and to those adjunct
fields which are,—where it is necessary for us to have
312 first-hand and fundamental information as it may apply to the scope of our business.

Q. 182. But generally speaking, doctor, wouldn't you say that these manufacturing concerns that have laboratories such as listed in this official publication of the National Research Council, are engaged in the work in connection with those concerns, of improving their product or their service in reducing costs of production, in developing new fields of application, in developing and availing themselves of by-products and materials, and in developing new products and doing those general things. Would you say that?

Mr. Blackman: I am going to object to that as irrelevant and immaterial, and no foundation for the witness' knowl-

edge of what the other manufacturers do. I don't want to interfere with anything within reason, but I think that is getting a little beyond.

Mr. Haight: Do you want the doctor to answer the question?

Mr. Blackman: If you want him to.

Generally speaking, these manufacturing concerns that have laboratories, such as listed in this official publication of the National Research Council, are engaged in the work in connection with those concerns, of improving their product or their service, in reducing costs of production, in developing new fields of application, in developing and availing themselves of by-products and materials, and in developing new products and doing those general things, as far as the organizations enumerated in this list relate to the larger organizations or the more substantial associations of organizations.

I would make the qualification, without having examined
313 the list in intimate detail, but from my general knowledge of research organizations or things alleged to be research organizations in this country, that as regards the smaller of the organizations, there will probably be found a considerable number which operate under the title of research laboratories which are not, in fact, as I understand them, research laboratories. As a matter of fact, there may be listed in that large number in that book things which are designated as research organizations which are not conducting research in the field of physical or chemical science, or, we will call it the field of physical and chemical science, but really are organizations which are operating in the field of business exploitation. I may be wrong as to that last, but certainly there have been in recent years organizations in this country which were known, and organizations connected with some of the larger groupings which were known as research laboratories which had nothing whatever to do with the things which were involved in your question except in so far as they tended to amplify the business of the company.

I am familiar in a broad way with the research and development laboratory work done by such concerns as Du Pont, General Electric and Westinghouse Electric.

Q. 185. With respect to those manufacturing concerns, what is the difference,—of course it is in a different field, but broadly as to character, what is the difference between

work done by the Bell Telephone Laboratories or the Department of Development and Research of the A. T. & T. Company from the work done by and for those manufacturing concerns, by their own laboratory?

Mr. Blackman: I object to that as irrelevant, immaterial and incompetent, and no foundation laid for the witness' knowledge as to the details of the operations of other research organizations.

In one very important particular I would say that the
314 work of our research organizations, and I use the words "research organization" because, as I testified yesterday, the Department of Development and Research, A. T. & T., and Bell Telephone Laboratories in their operations are essentially one thing. I will say that in one important particular this research organization of ours is unique and without any corresponding parallel in any other industry that I know of in that our primary function and the thing which is the guiding and impelling motive for our work is the development of the art and operation for the electrical communication business, is not primarily the development of physical things except
in so far as those physical things are a factor in the
315 giving of a better, cheaper and more extensive telephone and telegraph, generally, communication service in the electrical field to the people of the United States, and every act which we do in our broadest and most general function is viewed against the necessity of the operating units of our business and not against the operations of a manufacturing organization. We are not primarily seeking to develop things to sell to an ultimate consumer. What we are attempting to do is to develop a service to be sold to an ultimate consumer and the manufacturing side of the business and the work of the research organization which touches on that side is an incident to the main objective and not the primary, impelling force back of that organization. In practically all other research organizations with which I am at all acquainted, the primary object is the development of things, in the case of manufacturing organizations such as those you have mentioned, or the development of uses of things which others have developed in the conduct of one business, but in no other organization either in this country or elsewhere in the world do I know of an organization like the research organization of the Bell System, where the impelling motive for the vast

majority of our work is the development of a service to be sold, with nothing else incident to it. It is a very vast and very fundamental difference, as I see it.

316 Mr. Haight: In order that what we have been talking about may be identified, I will offer on the record the bulletin of the National Research Council as Defendants' Deposition Exhibit No. 2, of this date.

Mr. Blackman: I object to that as irrelevant and immaterial.

(Bulletin marked Defendants' Deposition Exhibit No. 2.)

317 Attention was called to an article by myself appearing in the Bell System Technical Journal of January, 1930. I notice at the end an author's note which says:

"The authors wish to acknowledge their indebtedness to a large number of members of the organization for their assistance in the preparation of this paper. It is impracticable to mention all who have been of assistance, but they wish to express their appreciation particularly to Messrs. O. B. Blackwell, W. E. Farnham, W. H. Harden, H. S. Osborne and W. A. Stevens."

O. B. Blackwell therein referred to is one of my assistants as head of the Transmission Development Department—Engineer of Transmission.

In general, the acknowledgment was made for assistance in the getting together of material for us and in the general scrutiny of the thing. Blackwell's stuff is easy enough to pick out. As I remember it, I surmise that Blackwell

318 had part in connection with cable plant, his work relating to transmission over cables, probably in connection with toll service,—both long and short toll service in so far as they relate to transmission matters. The same with regard to long distance service, so far as it relates to transmission. The same there with regard to open wire and carrier circuits, parts which may have to do with equipment details or with methods of operation, probably not.

Toll cables, certainly, in so far as they relate to transmission.

I surmise that probably Blackwell may have given us assistance with regard to maintenance of toll service in so far as the article may have related to the fundamental requirements which underlie maintenance, being the transmission

engineer; in regard to international connections, certainly—all of this foreign stuff, connections to Europe, connections to South America.

He gave us assistance presumably in connection with telephone circuits provided for private use in so far as they relate to transmission or to the multiplexing of telephone lines for telegraph use; the transmission side of telephone networks for program transmission in radio broadcast; telephony in connection with air craft operation, ship-to-
319 shore telephony, the transmission side of electrical transmission of pictures, the fixing up of the lines, telephony to other mobile stations, telephone public address systems, and the line side transmission side of anything having to do with experiments on television.

R. W. King is the assistant technical representative in my department, resident in London.

There is an article appearing in Bell Telephone Quarterly for October, 1928, entitled "By-Products of Telephone Research," by R. W. King, which begins on page 304 of that publication and ends on page 312. At the time this article was written, Mr. King was not in my department. He was in the Information Department at that time, although some years previous to that he had been in my department, and he came back to my department for this service abroad. I would have to read this article. Will do that and put answer
320 on the record later.

Referring to the article which appears in the Bell Telephone Quarterly of April, 1924, beginning on page 65 and ending on page 75, by R. W. King and G. W. Southworth, I agree with the following:

"Research helps to give not only better service at a reduced cost to those who use the telephone but also increases the variety of services offered. It is important, therefore, not only to the executives of the System but to the telephone user because it assures him the best service our knowledge of natural laws makes possible. It furthermore safeguards the investor and assures him that those spending his money have the broadest view of what science holds in store and that, as new discoveries are made, they will be woven into the plant, which his money has built, with the maximum of efficiency and economy and in such a way as to yield the best returns.

There are several methods of depicting a corporation's

business and financial standing. One of these, and perhaps the one most usually appealed to, is the balance sheet. But
the balance sheet tells of the past while research fore-
321 casts the future; and the Bell System, while proud of its
balance sheet, faces the problems and opportunities of the future with the largest research development staff in the world, with a successful record of achievement behind it."

The next article appears in the Bell Telephone Quarterly issue of July, 1928, an article by myself. I agree with the first two paragraphs, as follows:

"The Telephone Switchboard—50 Years of History."

"Reduced to its fundamentals the physical plant of that vast thing we designate as the 'telephone system' centers about three elements, namely, the subscriber's substation apparatus with its transmitter and receiver for projecting and receiving sound and its bell or other signaling apparatus for attracting his attention; the wires or other transmission channels which serve to carry the electrical impulses to and from the subscriber's equipment, and the switchboard which serves to interconnect the subcribers' equipments in any desired manner at any desired time and at the behest of users.

322 The innumerable multitude of intricate physical things involved in the make-up of the modern telephone plant are merely adjuncts required to insure the proper functioning of one or other of these elements. The widespread and far-reaching activities of manufacture and supply incident to the telephone business are merely the means by which we provide these fundamental elements in the quantities at the times and in the places required by the demands of the great telephone using public."

And turning to the next page (150) it continues:

"The hundreds of thousands of men and women who spend their lives in the telephone service are in the last analysis the providers, maintainers and operators of these three essential elements."

With respect to the next article which is one appearing in the Bell Telephone Quarterly issue of January, 1929, which begins on page 9 and concludes on page 24 and is entitled "Standardization in the Bell System," signed by H. S. Osborne, one of the engineers in the Department of Operation

and Engineering, I will be very glad to read it.

323 I will also read the next article, one appearing in the Bell System Technical Journal of October, 1925, beginning with page 545, entitled "Engineering Planning for Manufacture," by G. A. Pennock. The part within the pencil lines on page 545 and the part on page 552 and ending on page 554.

324 Appearing in the Western Electric News of November, 1929, is an excerpt from an article which is entitled "Europe to America by Cable," and is supposed to be excerpts from an interview with the chief of the Bell Telephone Laboratories by Frank Parker Stockbridge in Popular Science Monthly and it purports to be a quotation from me, and I will read it as it appears in this article:

"Out of our laboratory," said Dr. Jewett, "have come such inventions as the Orthophonic Victrola, electrical recording of phonograph records, talking motion pictures, television, aids to the deaf, measuring apparatus for the medical profession, the artificial larynx and a host of others, all of which have resulted from our efforts to improve telephone service. Many of our research men have achieved international reputation as the result of some of these by-product applications. All over the world, the names of Dr. Harvey Fletcher, Dr. Herbert E. Ives, Dr. O. E. Buckley, Dr. H. D. Arnold and others of our staff are known to scientists."

I don't remember that interview. It is true that all of those things have come out of our laboratories and it is true that some of these men like Dr. Fletcher and Dr. Ives

325 have derived their reputation primarily because of the publicity that has been given to these so-called by-products.

Of the four it is certainly not true with regard to Dr. Arnold and Dr. Buckley, and I presume in the case of Dr. Fletcher. Dr. Fletcher outside of the communication field is known primarily because of his work in connection with the aids to the hard of hearing. He is so well known, in fact, that he has been president of the National Association of—I don't know what the exact title is,—which consists of those engaged in aids to the hard of hearing including the medical profession, and he arrived at that distinction because of the outgrowth of his work in the development of the telephone transmitters and receivers and in the methods of making measure-

ments on which they are based. He is our leading expert on such types of equipment, that is, telephone transmitters
326 and receivers.

By Mr. Haight: From the same article I will endeavor to read this:

"I asked him for specific examples of how problems have been tackled and solved under his direction.

"'A good example is the research which resulted in substituting electrolytic iron dust for bundles of soft iron wire as a core for telephone loading coils,' he said. For years we had to maintain an enormous wire drawing plant, using diamond dies to draw the iron wire. The cores were expensive and difficult to make. A young man named Buckner Speed came to me with the suggestion that cores could be made of electrolytic iron dust, highly compressed, if some way were found to insulate each dust particle so as to get the same effect as a bundle of wires. I authorized work to be done on this problem with the result that an iron dust type of core electrically much better than the iron wire core, was evolved in the laboratory. That was one of the first improvements on the loading coils invented by Professor Michael Pupin and developed commercially in our laboratory. And the Pupin coil, in turn, was the beginning of long distance telephony. By 'loading' the telephone circuit with inductance coils spaced at proper distances apart, the distortion and losses of the impulses in the wire are corrected. Professor Pupin worked out an engineering method for doing this and patented it. We bought his patent and turned over to Dr. G. A. Campbell and Dr. E. H. Colpitts the task of finding out how to make coils of high inductance, low energy loss and low cost and how to install and maintain them on telephone lines in accordance
327 with Pupin's rule. They did a really brilliant piece of research involving the need of devising new types of measuring instruments. That work has been going on for many years with increasing results."

Answer: "That is substantially part of the thing I testified to this morning."

327 There is one thing that I was quoted as having said there that I certainly would not say now and that is the reference to the beginning of long distance telephony. That depends entirely on what your definition is of long distance telephony, because at the time of the loading coil, they were

already talking many miles over circuits. It depends entirely on what you mean by long distance telephony. Its meaning has lengthened as the years have gone on.

I. Referring to an article entitled, "The Day's New Marvel," "Talking Movies Talk and Move Most Naturally in Western Electric's Latest Development," in the issue of June, 1926, of the Western Electric News, page 19, which reads
328 as follows:

"The system represents successful combination and conversion to motion picture use of three major research developments.

"The first of these is the electrical system of recording. This method employs a high quality microphone of an improved type, electrical amplifying apparatus, and a record cutting mechanism. Recording may be carried on at considerable distance from the source of sound so that the actors may be grouped naturally in any scene and need not be crowded before a microphone.

"The second essential feature is a remarkable electrical reproducer which converts the movements of a needle in the grooves of a sound record into electrical vibrations. The electrical currents from this device pass into an amplifier and then operate a high quality loud speaker of an improved type, capable of filling practically any motion picture auditorium.

"The third development is the link between the reproducer and the audience in a theatre. An adaptation of the public address system makes it possible to pick up electrical vibrations from the reproducer, amplify them, and by means of properly located loud speaking telephones, transform them into sound. The loudness is so regulated as to give the delusion that the source is the actors whose pictures appear on the screen. In the case of musical programs a specially constructed loud speaking telephone insures the correct volume and naturalness."

I have no quarrel with it as a general statement. I think I have testified to all the elements before.

329 By Mr. Haight: Dr. Jewett, there is a rather long article appearing in the Western Electric News, issue of January, 1919, entitled, "Enter Multiplex Telephony and Telegraphy," by you which purports to be as chief engineer. I would like to put that in the same category as the others that have been marked and place it on the record later. The volume

is Volume 7, No. 11, for January, 1919. The next one I would like to put in the record on the same understanding. It appears in the Western Electric News, Vol. 3, No. 4, issue of June, 1914, and headed "Engineering Department of the Western Electric Company," by F. B. Jewett, assistant chief engineer, and the question will be if that is correct.

In the Bell Telephone Quarterly of the issue of October, 1922, I find an article purporting to be by O. B. Blackwell, beginning on page 12, "Notes on Radio" is its heading, and it ends on page 25. In view of its length, I would like to ask the same question as before and have the answer put on the record later, as counsel has kindly agreed in the other instances.

Mr. Blackman: Do not misunderstand me. I have not agreed that they be put on the record. I have agreed that Dr. Jewett will answer your question and that you can offer them in evidence if you desire at a later period. Really I feel that this is padding the record to such an extent that although I like most of these articles, I may feel that I will have to object, but we will not make any technical objection to your mode of procedure. We will facilitate you all we can in getting your offer on the record of the paper, if you want it.

Mr. Haight: That will be sufficient.

330 I subscribe to the general statement in the marked paragraph in the Bell Telephone Quarterly issue of July, 1931, an article entitled, "The Development of the Microphone," by H. A. Frederick, presented at the Fifth Meeting of the Acoustical Society of America, Camden, N. J., May 5, 1931, as part of a symposium on microphones, page 183 thereof. I am not in position to testify as to the specific details of the work referred to as that of Wente and

331 Crandall, as I do not identify that work, but as a general statement and under the conditions and limitations which he sets forth there I think it is a fair statement.

The material referred to is as follows:

"About 1915, the vacuum tube amplifier became a potent influence on the development of microphones for certain applications, particularly where cost was not important. It did two things, it made it feasible to use, in these applications, a microphone of low sensitivity or efficiency and it created fields of usefulness for instruments of this type. It shifted

the emphasis, at least in places where low cost was not a controlling element, from a magnitude of output basis to quality or faithfulness of reproduction, uniformity and reliability. In addition, it offered possibilities of exact measurements of acoustic effects if used with a suitable microphone. This influence was almost immediately reflected in the development of a very high quality condenser microphone by Wente (Fig. 21). This instrument was developed for use in such acoustic researches and its commercial applications were developed later. The faithfulness with which it reproduced sounds over a very broad range both of frequency and intensity represented a vast improvement over the previous microphones. It was later improved by Crandall (Fig. 22), has received much commercial application and is used as the transmitter of the International Reference Standard with which the volume efficiencies of all commercial telephone transmitters are compared."

334 In Department of Development and Research of the A. T. & T. Co., leaving out all questions of personnel, there may have been slight changes in designation, but certainly as regards its main divisions, it is the same form of organization as I found it when I came to be its head,—and largely of the same personnel at the heads of those departments. Its general field has been the same, except as that field has been added to by new developments.

Mr. Haight: We offer in evidence an organization
334 chart as above identified, as Defendants' Deposition Exhibit No. 3 of this date.

(For deposition of John Edward Otteson, see Abst. Vol. IV, pp. 1239-1256. For deposition of Hugh Blair-Smith, see Abst. Vol. III, pp. 849-880.)

DEPOSITIONS RESUMED

January 11, 1932, at 195 Broadway, New York.

THEODORE G. MILLER, for defendants.

Direct Examination by Mr. Haight.

390 I reside 520 East 86th St., New York; I am vice-president A. T. & T. and have been for about two years; I have been with company since September, 1904; I have charge of Long Lines Department; I was first general manager and then vice-president; I became general manager of Long Lines some time after 1923; I have been vice-president for about two years; became general plant manager of Long Lines about 1919; prior to 1919 and from about 1913, I was
391 division plant superintendent of Long Lines, Chicago.

Long Lines services consist of toll message and special
392 contract, both telegraph and telephone. Special contract services are further classified as full time telegraph service, short period telegraph service, and the same thing with reference to special contract telephone service; also telephotographic service, which is in effect a message service and not a special contract service.

I now remember an additional program service for broadcasting; also, we rent wires to the Government and to aircraft operating companies in connection with aircraft operations.

We rent public utilities, power lines and oil pipe con-
393 cerns a service under special contract service—loading coils and repeaters. There is not very much of it and it is rather special.

The service of telephone circuits provided for private use in long distance service is classified as special contract. That is either full time or short period telephone service.

With respect to full time telegraph service, we rent circuits to anybody, such as press associations, brokers, banks, manufacturing concerns, government departments and aircraft operators.

As to short time telegraph service, we grant a telegraph

circuit for a minimum of one hour and then in multiples of hours, covering printer and teletypewriter service. The customer may have a wire and operate it by operators or rent a machine from us.

394 Teletypewriter service is used both in long time and short time service, and so far as the equipment is concerned, there is no distinction between the two services. Full time is the period of eight hours per day. Full time telephone service covers a period of 24 hours a day. They are private wires. General Motors had one, but we haven't many as compared with telegraph.

Short period telephone service is where a private telephone circuit may be rented for 15 minutes every day or more at a certain period outside of the busy hours. There is,
395 however, little of it. Brokers; manufacturers and newspapers have that sort of service.

We have telephoto-transmitting and receiving stations in several places and transmit telephotos on a message basis. There are not many such customers. The biggest single use is for newspapers. They send pictures, etc.

Program service is broadcasting chains and consists of permanent net works, temporary facilities for special occasions and pick-ups. Our two biggest customers are the National Broadcasting Company and the Columbia. The National has two chains, one of which extends to the Pacific Coast and the other as far west as Minneapolis, St. Louis and so on, and the Columbia has a big chain also which extends to the Pacific Coast.

There are other customers such as the American Broadcasting Company on the Pacific Coast. There are several broadcasting stations that are not on chains but they broadcast to other stations. One in Boston has a little network of its own running through New England. There are several similar ones but not big chain customers.

A railroad can rent a circuit just as any other cus-
396 tomer. I am not sure whether any circuits leased from us are used in train despatching. I think most of the telephone circuits that are used for train despatching are owned by the railroad companies. Public utilities, electric power companies and pipe line companies use the service for communication with the intermediate stations regulating

their service in emergencies.

397 Telephoto services comprise stations in Boston, New York, Atlanta, Cleveland, Chicago, St. Louis, and we connect also with the Pacific Company at Los Angeles and San Francisco. A map would show lines connecting them.

We have separate maps showing the National Broad-
398 casting System and Columbia networks.

Defendant's Exhibit 13 for identification is a map at page 71 of the April, 1931, issue of Bell Telephone Quarterly, which map is contained in the article in said issue
399 entitled "Program Transmission Networks Provided by the Bell System as of March 15, 1931." This map fairly illustrates program networks.

400 I know that we have reports showing what the revenues of the Long Lines Department are on the toll message business and from the special contract services. I have no reports available showing how much it is for, * * * I know what it is from the broadcasting services. I do not remember ever seeing any reports showing just what it is for the short period as distinguished from the full-time services. We have reports showing revenue on telephotographic services.

We have the toll message revenues segregated from the special contract service revenues. The revenues for telephotography, which is not a special contract service, are segregated from the special contract service revenues.
401 The revenues from broadcasting are also segregated. There are no others. The revenues from the telegraph service are not segregated in any reports that I saw. I do not know whether it is segregated, but when we want to know we estimate what percentage it is of the special contract revenue.

In our department we are not able to separately identify the investments in Long Lines plant with respect to each class of service. We can make estimates of the proportions used in each and we have made such estimates from time
402 to time. In making those estimates we have not segregated. We have estimated the plant,—it would be reasonable to assume that so much was used for each one, but the plant itself has not been segregated for the accounts. There has been no segregation as to the investment of Long Lines as between toll message uses and special contract services.

Mr. C. Morsack is the auditor and has charge of the books. Arrangements between Long Lines and customer with reference to special contract services are shown by written contracts. I can produce a form of contract for each service.
403 The contract specifies the periods of the service to be furnished in the case of both telephone and telegraph special contract service. Telephotographic service is message service and is sent just like a telephone message.
404 There is a contract different from the special service contract covering program broadcasting. There is a form for permanent facilities and one covering temporary or recurring service. I will produce the forms of contract with respect to the different special services, including railroad forms.

The Illinois Bell gets a commission on all calls originating in its territory and they get payment for the use of trunks for all classes originating in its territory and they get a pro rate of the revenues for the plant within the City of Chicago. For special contract service they get a pro
405 rate and also a commission. They also get a pro rate out of full time and short period telegraph service. They get paid for the plant they furnish. They furnish all the plant in the City of Chicago.

The compensation of the Illinois Bell in relation to full time and short time telegraph service is different from other cities because Illinois Bell owns the plant. There isn't any special pro rate, however. The pro rate is simply upon the value of the plant in Chicago used generally in the long distance service. It has no relation to the revenue received by the Long Lines for full time or short period telegraph service. The same applies to full and short time telephone
406 service and as to telephotographic program and other special services.

Q. 102. Now, are any of these special services rendered direct to the user from the Long Distance tollboard or are any parts of it rendered through the exchange offices in Chicago?

Mr. Blackman: I shall have to object to this line of examination. You are getting into a subject that is not before the court, as I understand it.

Mr. Haight: Then I do not read the opinion right. We think it has relation to the property that is used in these various

Q-3

offices, and it has pertinency to the matter of segregation.

Mr. Blackman: You have a right to press your question if you want, but I make my objection on the ground that it is incompetent, irrelevant and immaterial.

The special services are rendered by lines from the long distance toll board to the offices of the customer. Whether the plant which the Illinois Bell furnished for those services between our central office to the customer's offices happens to go through some of their exchanges, I don't know, but
407 the customers do not come to our central office to get their special service, it is taken at their premises. Special wires, for instance, go through a loop furnished by the Illinois Bell to the long distance tollboard, from the customer's premises. Telegraph service both full time and short period are handled in the same way. These loops may go through the exchange boards first. The full time telephone and short period telephone are handled in the same way as telegraph services. They carry direct to the customer. They terminate in the customer's premises. The cables from the customer's premises in many cases are operated through the ex-
408 change offices but the loops are routed direct from the tollboard to the customer's premises. The same is true with reference to program service.

The billing for these special contract services is direct from Long Lines to the customer.

409 As to teletypewriters used by the customer in these different services, they are leased to the customer and in many cases the associated company owns, furnishes and maintains them. In Chicago the Illinois Bell owns the teletypewriters. That is true with reference to the equipment used in other special services.

The broadcasting companies own their own stations.
410 I think some of the broadcasting equipment is bought from the Western Electric. Some of the press associations own their teletypewriting machines, but not all of them. Long Lines or associated companies own them and they are furnished under a contract.

Teletypewriters used by broadcasting companies on their telegraph wires would be furnished by Illinois Bell in Chicago. Long Lines makes the leases but Illinois Bell furnishes the apparatus in the City of Chicago; that is, we sign the

contract with the National Broadcasting Company for a net work all over the country and where teletypewriters are
411 used in connection with their program wire, they would be furnished by the associated companies under the same arrangements as exist with respect to any kind of special service contract. In Chicago we take broker's wire or bank wires, we make a lease with the customer, but we arrange with the associated companies to provide the teletypewriters where they are required. In such cases the customer pays us and we pay the associated companies.

On special contract services the associated companies get a commission on a regular schedule basis on the revenues from the contract. That is true with reference to Chicago. The situation in Chicago is special with respect to commissions for message services. There is a regular basis for the
412 commission which is the same on all messages while there is another schedule for the business that originates elsewhere.

Assuming that the Chicago Tribune at Chicago has special press service, the Illinois Bell would furnish the teletypewriters and there is a separate rent for the teletypewriter as distinguished from the rent for the use of the lines. The rent for the teletypewriter is paid to the Long Lines if it is in connection with a Long Lines contract. Long Lines
413 keeps it. I could not answer whether Long Lines pays anything to Illinois Bell for the use of that instrument. I don't know whether there is any written contract with the Illinois Bell as to compensation on special contract services, but there is a schedule. Mr. Morsack may be familiar with that.

I do not think the schedules are printed but are in the form of letters. Mr. Carter ought to be familiar with those.

I know of no property in Chicago belonging to the A. T. & T. or that is used in the special contract services. There is a contract between the Western Union and the A. T.
414 & T. under which Western Union can obtain wires to use to transmit messages, which has been in force two or three years. There is a similar contract with the Postal Telegraph & Cable Corporation for about the same time. The General Department of A. T. & T. have the custody of those contracts. Long Lines has been furnished with copies.

Long Lines publishes a magazine called Long Lines and

has done so for about ten years; published each month; Herman Hocker is the editor who reports to Mr. Rood, the
415 publicity manager. I imagine there is a complete file. I don't know whether there is any objection to defendants looking at those.

(Counsel for plaintiff stated they would advise as to whether it will be furnished.)

416 There was an increase in Long Lines plant between 1920 and 1930 to provide many more facilities for the increase of business. There has been a considerable increase in the various special services. The program service is all new in that period and we have had to increase the plant to provide for that service. There has been a big increase in all special services except telephotographic service, which is the smallest special service. Telegraph business is the largest one and broadcasting is the second. Special contract telephone service is third, but it does not amount to very much compared with the total business.

418 Our records are kept so that I could furnish the form of special services by classes for the years 1920, 1925 and 1930. I think Mr. Carter knows more about that.

Q. 187. Now, in regard to the toll message service, has there been any general trend of change in that from 1920 up to date?

Mr. Blackman: I object to that; it is irrelevant, immaterial; it is not intrastate service. I think we have gone about as far as we should.

Mr. Haight: It is interstate service in which the record already shows interstate property is used.

Mr. Blackman: Yes, that is true, but here you are going into a question purely relating to interstate business. All the Long Lines services, being interstate, of course.

Mr. Haight: Yes.

There has been an increase in the toll message service between 1920 and 1930. However, the trend lately was different from what it was in 1928 and 1929, but it increased very rapidly up until about two years ago. Since then it has been decreasing. I can furnish the amount of toll message revenue for 1920, 1925 and 1930.

420 There have been several decreases in the long distance message rates in the last five or six years for everything in excess of 40 miles. Improvements in equipment or facili-

ties have had bearing upon such reductions because of ability to handle business more economically thereby, such as development of repeaters, loading coils, cables, switchboards, operating methods.

Q. 201. Have there been any developments of equipments or improvements in equipment in exchange plants that have helped to increase the volume of long distance messages?

Mr. Blackman: You mean exchange plants of the local companies?

Mr. Haight: Yes.

Mr. Blackman: I object to that on the ground that I do not know that this witness is familiar with the details of that; he has not been shown to be.

Mr. Haight: I do not want him to tell us anything he does not know.

I am not competent to answer the question as to whether improvements in equipment in the exchange or local plants have had anything to do with the increase of long distance business. There has been no reductions, however, in the rates for special contract telephone and telegraph services.

421 There have been some adjustments in the rates for printers and in connection with some broadcasting rates,—minor reductions, which reductions apply really to some of the accessories rather than the main service.

422 The auditor of Long Lines makes reports on the financial situation to the comptroller of the A. T. & T.—income accounts. The assistant treasurer makes what we call a cash report to the treasurer. No reports are sent to the comptroller, except those specified by the Interstate Commerce Commission. However, there are other reports of cash requirements and provisional estimates made from time to time. I have to do with the provisional estimates and estimated cash requirements reports sent to the comptroller, Mr. Morsack, also. I had to do also with the determination of Long Lines long distance message service rates. Our aim in fixing the rates from time to time was to get a fair return and stim-

423 ulate as much business as we could by reduction in rates, and to fix a reasonable rate for long distance service. I think we have accomplished that from time to time with these various changes in rates.

The Eastern Telephone & Telegraph Company was bought by the A. T. & T. and operates in Nova Scotia and New Bruns-

wick under a franchise from the Canadian Parliament to construct lines through Canada, and it was purchased to get rights to build a line through Nova Scotia and New Brunswick and for the purpose of connecting it with the transatlantic cable from Newfoundland to England, and it will be by that means that Long Lines will furnish transatlantic cable service.

The Transpacific Company operates the Pacific Coast radio station which now gives a service to Honolulu.

424 There are a lot of different companies that hold title to Long Lines property, there being one in the majority of the states, one in Illinois. There are probably about thirty of these different companies.

Our engineer, Mr. Pilliod, can give a better idea of what provisions have been made for future developments and increase in Long Lines. He has fundamental plans for providing facilities over different routes and for providing new routes. We have a pretty general picture of the future for about five years. We have had computed for each year the return on investment in Long Lines. Mr. Morsack prob-
425 ably has those records.

Long Lines has a separate headquarters from the A. T. & T. at 15 Dey street, but since 1920 Long Lines has occupied space in the A. T. & T. Building at 195 Broadway, and still occupies space, but it is very little.

The organization chart of Long Lines has been practically the same with slight changes only since 1919. I will produce an organization chart.

I will check up the map appearing on page 69 of Bell System Technical Journal for January, 1930, which map is in connection with the article by Gherardi and Dr. Jewett and is entitled "Special Contract Telegraph Service Furnished to the Press Association Circuits Totaling 24,000 Kilometers are Used Exclusively by the Press Association for Distributing News to Its Customers"; also the map appearing on page 70 of the same publication, being Fig. 55, "Special Contract Telephone Circuits Furnished to a Brokerage Company, 30 Circuits Totaling 38,000 Kilometers with 95 Stations." Also map or illustration on page 73, same publication, above the legend "56" and the words "Routes of Bell System Telephoto Service in the United States."

(The said pages of said publications were marked for iden-

tification as Exhibits 14, 15 and 16, respectively.)

I will check up the article appearing on page 83 in Bell Telephone Quarterly, April, 1930, entitled "Transoceanic Telegraph Service, General Aspects of," written by me.

428 CAJETAN MORSACK, for defendants.

Direct Examination by Mr. Haight.

I reside at West Orange, New Jersey; I am auditor of Long Lines Department, A. T. & T. and have been since spring of 1922.

The business of Long Lines is classified in the accounts into message tolls, special contract service, and telephoto and broadcasting. In general the telegraph service is kept distinct from the telephone service.

429 I can give information as to the revenues relating to the business as to long and short period telegraph service, full and short period telephone service, telephotographic and program service. We distinguish between telephone and telegraph service. Telephoto is separate. We have certain subdivisions of telegraph service, also. There is a segregation of private wire telephone service. Probably the teletypewriter service can be distinguished. The teletypewriter account covers the revenues derived from special contract services conducted by teletypewriter. I can produce an accurate listing of all those things, and will do so.

Reports of revenues are made by Long Lines to the Comptroller and by the Comptroller I mean the General Department of the A. T. & T. monthly and cover financial results of Long Lines. I could furnish those reports. The forms include balance sheet, income statement, revenues, expenses and

432 analyses of those major statements which appear on other reports. It would take a few minutes to get a set of forms of reports, which I will obtain.

I will produce an organization chart that will illustrate the organization of Long Lines back as early as 1923.

The general treasurer of the A. T. & T. is compensated through the apportionment of charges against Long Lines for general services, which charges amount to 1½ per cent Long

Lines revenue. There is nothing in addition to that for general services.

436 There is an assistant treasurer of A. T. & T. who is part of the Long Lines organization. I don't think there is any employe on Long Lines payroll that is also on the payroll of General Department. The publicity manager in the General Department is not also the publicity manager of Long Lines.

437 The Long Lines attorney, Mr. Elsasser, is counsel for Long Lines. He has an organization reporting to him. The general counsel of the A. T. & T. does not appear as part of the organization of Long Lines, nor does the tax attorney. However, I don't believe I am competent to answer the relation between Long Lines and the tax attorney and gen-

438 eral counsel. The only way I have of knowing whether any one is in our organization is by the payroll. I determine whether any one is in the Long Lines organization by whether that man is paid by the Long Lines.

Our reports include the revenues from special contract service that originate in Chicago, but that revenue is not segregated and it would be very difficult to say where it originates, because there are a number of points involved, any one of which might be considered as the originating point. Obviously we could segregate special contract revenues originating in Chicago, because it is the amount billed on those particular contracts. Only in the sense that the amounts of compensation which the Illinois Bell receives for services and facilities that they furnish in the City of Chicago are apportioned among the accounts, certain amount to special contract service revenue, certain amount to message toll business, to broadcasting, can the revenues attributable to Chicago be

440 segregated. For instance, with reference to the National Broadcasting Company, there are several localities involved in the hookups, one being Chicago. To segregate and attribute to Chicago any portion of such revenues could be done only on an arbitrary basis, and there is no segregation except as I have explained, namely, that the total compensation to Illinois Bell is apportioned to various revenue accounts as pro rate reduction. I can think of no billing made by Long Lines to the Illinois Bell on account of special services.

441 With respect to special services rendered by Long Lines in Chicago, we make a settlement for the plant and serv-

ices furnished by Illinois Bell there, and also we make a settlement with Illinois Bell for the amount of commissions on special contract services. I think Illinois Bell gets payment for the loop in connection with private wire service, and the amount of the payment is what the Illinois Bell would receive from a similar loop furnished to an outsider. I don't know how much that is. I think I can find out, but I am not sure; what is running through my mind is whether it is the same in all cases. In addition to the payment for the loop, it also gets a commission. I don't mean that the commission represents compensation for the use of the toll plant but what I do mean is that Illinois Bell gets a percentage or share of the revenue which is paid to the associated companies on two-way special contract services, which commission is calculated on the regular commission table depending upon
442 the amount of revenue and contract. There is a schedule covering it. I am speaking of all two-way special contract services. I don't know whether there is a contract but there is at least an exchange of letters. I will get the exact basis and (subject to consent of counsel for the plaintiffs) produce same, so far as it relates to the Illinois Bell in the Chicago business.

443 The system of paying commissions on special contract service started in July, 1930. Prior to that time no commission was paid at Chicago or at any other point. Prior to that, the Associated Companies were paid for special loops that were used and also a pro rata share for the line haul furnished, which is true at the present time.

In regard to the article in the Bell Telephone Quarterly for April, 1924, written by me, at page 500, describing the accounting system in the Long Lines, I will read the article and advise you whether it correctly described the accounting system at that time and whether such description holds true at the present time.

Mr. Haight: I think at this time the various forms of reports that were asked for have been brought into the room at the direction of the witness and then placed in the possession of counsel for plaintiff. What is your position?

Mr. Blackman: As to allowing you to see these forms, why, we will do that. We have already furnished you with these complete forms and every one of them; you have had all of them in your possession and have had them for many weeks.

As to permitting these forms to be marked for in evidence in this case, why, we may have objections to the offer, but so far as seeing them, why, you can see them.

It was agreed by counsel for plaintiff that defendant's counsel would be advised without delay whether pursuant to defendant's demand:

(1) Monthly reports, Long Lines, Nos. 1, 2 and 14, covering the month of December for each of the years 1919 to 1930, both inclusive, will be produced.

(2) Monthly reports, Long Lines, Nos. 1-A, 3, 4, 7, 11, 18, 22-A, 22-B, and 22-C for each of the years 1919 to 1930, both inclusive, will be produced. December monthly reports may be sufficient if that report covers pending months of each year.

(3) Provisional estimates, Long Lines, reviewed by report 22-B from 1919-30, both inclusive, will be produced.

Article entitled "Accounting in the Long Lines Department"—Bell Telephone Quarterly, April 1924, being Defendants' Exhibit 17 offered and received in evidence. That article was written by me, is correct as of the time it was written and as of today, except there have been certain minor changes
448 and one major item change effective January 1, 1932. As to the latter, all the field accounting forces formerly part of the Plant Department have become part of the Accounting Department. The minor changes are of no particular importance.

Up to the end of 1927, the license payments by Long Lines were computed only upon the toll message business. Since that time the computation has been made by taking a percentage of the total revenue of Long Lines less uncollectibles, including telegraph business, all special contract services—total operating revenues.

We compute the return on the investment of the Long Lines Department, as a whole, for all years in the regular course of business for the officials of the company, that is, all the administrative people of the Long Lines Department and for transmittal to the comptroller. Those computations have been preserved and are on these monthly reports. I think Nos. 1 and 22 are the only ones which show that. I do not think any of these reports actually show the computations in the form in which they were computed. This 22-B, for example, shows total telephone earning to average plant in

service. If we look at 22-A and B we may get an answer to the question as to each year, the question being what were the telephone earnings on average plant in service.

451 By "average plant in service," we do not include construction work in progress.

Cross-Examination by Mr. Blackman.

So far as I can remember, the tax attorney and the general counsel of A. T. & T. were not on the Long Lines payroll, but each of the officers had a force engaged on Long Line work and they were on the Long Line payroll. Mr. Elsasser reports to Mr. Miller not to Mr. Bracelen but at that time this organization chart shows a report to the general counsel. When that was in effect, while the general counsel was not on the Long Lines payroll, a certain force under him was on the Long Lines payroll and paid by the Long Lines and

452 charged to the Long Lines account.

The assistant treasurer A. T. & T. is on the Long Lines payroll and reports to the vice president, his entire salary being paid by Long Lines. Long Lines has a complete organization of its own and pays its own people.

453 JAMES J. PILLIOD, for defendants.

Direct Examination by Mr. Haight.

Reside New York City; engineer of Long Lines Department since January, 1920; graduated in electrical engineering, Ohio Northern University, in 1908; have been with A. T. & T. practically ever since; with them somewhat before that date.

I will read the article, Bell Telephone Quarterly, January 1923, entitled "Engineering on Long Lines," p. 18, written by me, but my recollection now is that it sets forth the situation at that time, and since the changes have been principally in personnel. Different problems have been presented on account of activities in radio field, for instance. Fundamentally, the engineering problems are not changed. It is merely new

454 additional things brought in, but it is a new branch of our activities. A great deal of it is merely an extension of the older art, gradually merging from the old art into the

new. Some changes, however, have been required to be made on account of radio broadcasting.

455 Our general telephone circuits are all designed for 2-way operations, that is, communication between two telephone instruments one in one location and one in another. The radio broadcast is fundamentally a 1-way transmission service. However, there are occasions when they do 2-way service.

In broadcasting circuits we have a great many stations connected to the same circuit, which is quite different than in the case of telephone circuits where generally you have only two instruments. To that extent it is a slightly different art. However, the same kind of copper wires with necessary modifications are used. Special circuits have been required as any change you might make in a fundamental business requires special attention or special apparatus.

456 The use of teletypewriter has been developed over a number of years and is one added feature to our activities. They do not in themselves require any fundamental changes, however. Teletypewriter is an instrument to connect on to the end of the telegraph circuit, and the change is really from the telegraph instrument to the teletypewriter instrument. The tendency has been to work at considerably higher speeds with the teletypewriter than was possible by hand operation, which has required an improvement to some extent in the telegraph circuits themselves, to the apparatus connected to those circuits, which has required the replacing of some of the older type of apparatus that might have been suitable for hand speed.

The teletypewriter Private Branch Exchange systems is a board which can be used for terminating a number of cir-

457 cuits to which are connected teletypewriter machines and also telegraph lines to other points either in another city or in the same city. This board is so arranged that the different teletypewriter stations can be connected either to each other or to the line extending out from the switchboard. In Long Lines in the last few years there have been a number of different developments to make the service more efficient and economical to operate; carrier telegraph systems, improvements in methods of operating telegraph service in cables, there have been new telegraph circuits devised; all such have

been directed to better and cheaper service. The carrier telegraph system enables us to operate possibly ten telegraph circuits over one pair of wires and to operate telegraph circuits in cables more efficiently.

(It was agreed by counsel for plaintiff that the follow-
458 ing described documents, papers, etc., marked as exhibits for identification, as indicated below, may be received in evidence, subject only to objections as to materiality and relevancy:

That portion beginning p. 565 under the caption "Carrrier Telephone Growth in Bell System," ending p. 566, just preceding the title "New System Replacing Older Type," and chart on p. 566, of that portion of article entitled "Carrier Systems on Long Distance Telephone Lines" by H. A. Affel, C. S. Demarest and C. W. Green—Bell System Technical Journal July 1928, Defendants' Deposition Exhibit 18 for identification.

An article entitled "Milestones, Guideposts and Footprints" by R. T. Barrett,—Telephone Quarterly April 1931, beginning pp. 80-91—Exhibit 19 for identification.

Same issue, same publication, an article entitled "Tele-
459 typewriter Service and its Present-Day Uses," by W. L. Dusenberry, pp. 92-102—Exhibit 20 for identification.

An article, Bell. Tel. Quarterly, April 1925, by J. O. Perrine, entitled "The Development of the Transmission Circuit in Communication," pp. 114-131—Exhibit 21 for identification.

Bell System Tech. Journal—January 1930—article by A. B. Clark entitled "Wire Line Systems for National Broadcasting," pp. 141-149, including map opposite p. 142, Exhibit 22 for identification.

Bell System Tech. Journal—July 1930—article by H. S. Osborne, entitled "General Switching Plans for Telephone Toll Service—pp. 429-447, Exhibit 23 for identification.

Bell Telephone Quarterly—July 1929, article by R. B. Parker, entitled "Telephone Typewriters and Auxiliary Arrangements," pp. 181-194, Exhibit 24 for identification.

461 Bell Telephone Quarterly—October 1924, article by C. W. Foss—article entitled "World's Telephone Statistics, 1923"—pp. 270-282, Exhibit 25 for identification.

Bell Telephone Quarterly—January 1925, Article by D. F.

Houston, article entitled "The Work of the Bell Telephone Securities Company," pp. 37-41—Exhibit 26 for identification.

Bell Telephone Quarterly—January 1928, Article by F. E. Richter, entitled "An Economic Review and Outlook," pp. 27-41—Exhibit 27 for identification.

Bell Telephone Quarterly—January 1923, Article by C. A. Heiss, entitled "The Budget Plan of the Bell System," pp. 32-42—Exhibit 28 for identification.

Bell Telephone Quarterly—July 1931, Article, no author's name appearing, entitled "World's Telephone Statistics, January 1, 1930," pp. 138-149—Exhibit 29 for identification.

Same issue—Article by R. S. Coe, entitled "Some Auxiliary Services and Facilities of the Bell System," pp. 150-163—Exhibit 30 for identification.

463 Bell Tel. Quarterly—April 1922, Article entitled "The Radio Telephone Situation," pp. 2-12, by A. H. Griswold—Exhibit 31 for identification.

Same Issue—Article by D. F. Houston, entitled "The Work of the Bell Telephone Securities Company," pp. 13-22—Exhibit 32 for identification.

Bell Tel. Quarterly—July 1931, Article entitled "The Measurement of Noise, a New Service of Electrical Research Products," by S. K. Wolf, pp. 189-192—Exhibit 33 for identification.

464 Bell Tel. Quarterly—Article October 1926, entitled "Some Problems of Statistics and Economic Research in the Bell System," by C. A. Heiss, pp. 238-252—Exhibit 34 for identification.

Bell Tel. Quarterly—Article January 1926, entitled "An Economic Review and Outlook," by F. E. Richter—pp. 23-33—Exhibit 35 for identification.

Bell Tel. Quarterly—January, 1927, Article entitled "1926-1927—An Economic Review and Outlook," by F. E. Richter, pp. 9-20—Exhibit 36 for identification.

Bell System Tech. Journal—October 1925, Article en-
465 titled "General Engineering Problems of Bell System," by H. T. Charlesworth, pp. 520-521, 522, using the part entitled "Engineering Cost Studies"—Exhibit 37 for identification.

Same issue—Article entitled "Engineering Planning for

Manufacture," by G. A. Pennock, pp. 542-560—Exhibit 38 for identification.

Bell System Tech. Journal—January 1925, Article entitled "Engineering Cost Studies," by F. L. Rhodes, pp. 1-14—Exhibit 39 for identification.

466 Defendants' Depositions Exhibits 40 to 50, for identification, both inclusive—Annual Reports of Directors of A. T. & T. to the stockholders thereof for each of the years 1920 to 1930, both inclusive.

Defendants' Depositions Exhibits 51 and 52, for identification, similar annual reports for the years 1918 and 1919, are to be substituted and marked.

469 Defendants requested the production of various docu-
471 ments and agreements relating to Western Electric and its subsidiaries, which requests were complied with. See Abst. pp. 2286-2289, *infra*, this volume.

Defendants requested the production of the following documents with respect to matters relating particularly to A. T. & T.:

472 1. The agreement between Columbia Phonograph Company and A. T. & T. or its subsidiary, covering record producing which was referred to in connection with the testimony of Dr. Jewett.

2. An agreement of the same general nature between A. T. & T. or its subsidiary, and the Victor Talking Machine Company (may be Victor Phonograph Company).

3. The minutes of the Board of Directors A. T. & T. for years 1919 to 1930, both inclusive.

4. The minutes of the meetings of the executive committee A. T. & T. for years 1919 to 1931, both inclusive.

5. License contracts between A. T. & T. and associated licensee companies as of January 1, 1918, and following.

473 6. The contract between A. T. & T. and Western Union or contracts, if such be the case, relating to subject matter of use of Bell Tel. Laboratories facilities or services.

7. Contract or contracts between A. T. & T. and Postal Telegraph & Cable Corporation, covering the same or similar subject matter.

8. The letter dated November 2, 1923, from H. B. Thayer to J. P. Morgan & Company, relating to and in connection with the sale of one million dollars A. T. & T. 20-year sink-

ing fund 5½% debenture bonds dated November 1, 1923, due November 1, 1943, and also in connection with that the A. T. & T.'s balance sheet of September 30, 1923, and the Bell
474 System's balance sheet of September 30, 1923, which accompanied the letter hereinabove in this request identified.

9. The letter of H. B. Thayer to J. P. Morgan & Company written in connection with the sale of $125,000,000 A. T. & T. 35-year sinking fund 5% gold debentures, which debentures are dated January 1, 1925, and due June 1, 1960. In this request and the one preceding it, the H. B. Thayer referred to is the president A. T. & T. and the letters referred to written by him in his official capacity as president.

10. Letter of Walter S. Gifford, president A. T. & T., written to J. P. Morgan & Company in connection with sale of $150,000,000 of 35-year 5% gold debentures, said debentures being dated February 1, 1930, to February 1, 1965, and were sold by A. T. & T. on or about February 1, 1930.

11. Also three letters, one being a summary of letters requested under item eight above, another summary of letter requested in item 9 above, and the other a summary of letter requested under item 10 above, written to J. P. Morgan & Company at about the dates of the letters referred to
475 in the preceding requests or notices, items 8, 9 and 10, and part of the transactions therein referred to.

Defendants requested information as to whether coun-
476 sel for plaintiff would make any objection at the final hearing except as to materiality and relevancy to the offer in evidence by defendants of the following documents, records and data furnished or made available to defendants for inspection at the offices of Ill. Bell. Tel. Co. at Chicago:

1. Those mentioned in letter of Mr. Bracelen to Mr. Goldstein dated September 22, 1931.

2. Statements showing revenues, expenses and average assets of A. T. & T. allocated to Long Lines license contracts and holding company operations from 1923 to 1930, both inclusive.

3. Statement showing revenues and expenses A. T. & T. allocated to Long Lines license contract and holding company operations for last five months of the year 1919 and to and including the year 1922.

4. All documents, data and records furnished or made available to defendants for inspection by plaintiff, not mentioned in the foregoing paragraphs 1, 2 and 3.

478 HARRY H. CARTER, for defendants:

Direct Examination by Mr. Haight:

I reside at Pelham, New York; I am general commercial manager of Long Lines and have been connected with Long Lines for about four and one-half years.

So far as I can see, the organization chart handed me as of July 1, 1927, is the organization chart for that year. Except for personnel, it has been the same since, except we have added some field officers at Washington and Detroit, and there has been added also since, a general sales manager. I will produce a later organization chart.

479 The general commercial representative is not in existence any more. The general sales manager has taken over part of the function that was performed by the general commercial representative and the other parts go to the general commercial supervisor. The general sales manager directs the selling force of the department, makes studies in his section as to market conditions, where the service can be sold, and does the general line of work that a general sales head would do, etc. He has 12 or 14 people on his staff and those engaged in selling are at the present time around 90,

480 which covers the eight or nine field offices, as well as New York.

There is a commercial engineer in the Long Lines who has about 125 under him. He makes estimates of business, makes studies about charges, rates, tariffs and so on. He has to do with the toll rates. They keep data as to the volume of traffic by length of hauls. He has also to do with special service contracts, with developments and rates in connection with those services. I don't think he has anything to do with any commission cases.

The work of the General Toll Development Supervisor

481 would come now under sales manager. Part of the work originally handled by manager of auxiliary services is

done now by Program Supply Manager and part now by the Commercial Supervisor. The Program Supply Manager handles contacts with broadcasting companies. He has four or five people under him.

482 In the Commercial Supervisor's section there is the pricing branch for the facilities that the broadcasters desire.

I heard the classification of special contract services given by Mr. Miller, which is true except that the short period telegraph service is confined to teletypewriter service but not to Morse.

I have under me as General Commercial Manager about 350 to 360 people.

The Illinois Bell does some sales work with respect to special contract services, being able to close a sale for any of those services, that is, they handle the applicant for service, negotiate for the sale of the service, and the Illinois Bell

483 does that work. If the Illinois Bell is in touch with the customer who desires service from Chicago to New York as an example, it is in a position to take that contract for that service. In Chicago our own department and Illinois Bell sells special contract services. Likewise the Western Electric, when it was in touch with anybody that wanted our service, would be able to make the sale, because we are engaged in an employees sales campaign, Illinois Bell selling for us and we are selling for them. The Western Electric has entered the campaign.

484 Long Lines has an office in Chicago handling the selling of toll and special contract services. It is known as the Chicago division of Long Lines. It is a branch of the Long Lines Department like our New York, Washington or Cleveland offices.

I will look up and let you know on whose payroll the employes of the Long Lines are in Chicago. There are possibly 30 or 35 persons in Chicago in the Long Lines Department selling special contract services and long distance toll service for the Long Lines. I have no way of telling how much of the work is long distance toll service and how much is special contract service. Illinois Bell has in its organization what is known as toll and special contract force. I don't know the size of it. There are no regular reports of the efforts of

those persons in the Illinois Bell doing that work. However, the division office of Long Lines at Chicago has a record of the sales. There is a report to the Long Lines Department at New York City of the total sales, but that report does not divide the sales made by the Chicago division of Long Lines and those made by Illinois Bell. I have no way of distinguishing what was sold by one or the other. I could go back to the division offices in Chicago and get a division of the
487 sales between Long Lines and Illinois Bell. I have never done it, though.

I made some mention of the Western Electric in connection with the selling of services of Long Lines in Chicago. With respect to that, all the Bell System forces are engaged in an employes sales campaign, so-called. In Chicago I assume the Western Electric people, Illinois Bell people and all their forces like Long Lines, are engaged in this and are trying to sell any of the Bell System services, including Long Lines, in Illinois, that can be sold. I know, however, of
488 no specific organization in the Western Electric so engaged.

The Chicago office of Long Lines Department does work outside of Chicago of various kinds; it covers northwestern territory and the mountain states. The headquarters are out of Omaha, Minneapolis, Fargo, North Dakota, and Denver, and runs right up to the Canadian line, and all the group of states made up of the Mountain States Telephone Company territory.

489 Generally speaking, I assume that Chicago covers the center part of the City of Chicago, and they are in position like every other employe to sell services whether it is there or in the state or any part of the country. When the employers of the Illinois Bell are in a position to take an order for the furnishing of services and facilities that are available, including program service, they quote the rate for the facilities. There is a continuing program supply furnished after the sale is made in the case of program service. I think both Illinois Bell and Long Lines furnish that service. The Long Lines have some continuing services in Chicago.

490 The National Broadcasting Company network and the Columbia network both have stations in Chicago broad-

casting programs daily. I could get the information as to amount of the service rendered by the Illinois Bell in Chicago and as to that service rendered by the Long Lines; that is, how many stations are on the air daily that are hooked up with Long Lines and how many are on the air daily connected with Illinois Bell networks. I will get that information.

I should say that the same amount of that sort of service would be given by the Illinois Bell on a 16-hour continuing service that would be given by the Long Lines on a camparable service. Illinois Bell sales forces sell telephotographic service as another form of service that we offer. There is very little sold by either. Newspapers and picture companies employ that service. But there are no contracts for that service as it is on the basis of a toll message service. A high percentage of the full time telegraph service would have been sold by the Long Lines force.

491 Morse service is not used to any great extent by the
492 Associated Companies. If it is a Morse service, it requires a rather expert man on Morse. We have them in our department but I doubt if Illinois Bell has, or a teletypewriter man in their department.

Illinois Bell, as to short period telegraph service, using the teletypewriter, would have the same to do with the sale of that service as they would have in selling the full time service. I don't think they have men who devote their time to that exclusively. It is one of the several services their salesmen have to offer. The same activities with reference to sales apply to the sale of special contract telephone services, both long time and short time.

Prior to 1930, the Illinois Bell received for making sales of Long Lines special services, their regular charges for the facilities involved, without any commission. But for about a year and a half or two years it has received a commission. I will supply that date when the commissions started. It was figurd out on the same basis as the commission paid on
494 toll. I think there was an interchange of letters covering the amount of the commission, which I will produce. No compensation was paid by Long Lines Department to the employes of the Illinois Bell for selling special contract services of Long Lines. As far as I know, these employes got

their salaries from Illinois Bell.

With respect to the special sales campaign, the employes in the system have been asked to do all they could to promote the various services of the system—exchange, toll, special service and what not, so that any employe in any department at any place in the United States is informed as to
495 the several services we sell and they are in a position to intelligently discuss those services and close sales if the opportunity presents itself.

As far as I know, there are no special rewards for results in selling. The campaign has been running for probably two years. I think the campaign was originally suggested by several of the associated companies. I don't know to whom the suggestion was made, they just started it around and got some results. Several of the associated companies involved have been directing the campaign. I suppose the O. & E. department, A. T. & T. is used for advice and consulting purposes in connection with that activity, like they would be in connection with all other sales activities. By O. & E. I mean the operation and engineering department of the A. T. & T.

The Long Lines in connection with that campaign furnished certain information as to special and toll services; that is, generally how the services were being used, who had purchased them and how they were being made use of by the customers. The A. T. & T. division of Long Lines in Chicago participated in the campaign and were asked by the Illinois Bell people to help them sell their services like they were helping us sell our services. The campaign is a part only of the general selling work. It merely brings in more employes than we would nominally have selling the services and our force in Chicago continued selling special services as they
496 had in the past. There was no special advertising in connection with the campaign, but amounted to merely a further number of people put on the job of selling service.

497 I am the one to give instructions in respect to selling of Long Lines service, message or special, but I gave no instructions in regard to this selling campaign.

When the Illinois Bell makes a sale of special contract services of the Long Lines, the Long Lines bills the customer

and that is done continuously by Long Lines.

The Illinois Bell with respect to broadcasting operates
498 the facilities in Chicago to see that they are working properly each day that the program is on the air. That is, the Illinois Bell maintains the instrumentalities; lines in the City of Chicago in connection with special contract services.

Mr. Charles Barnett is head of the Long Lines Division in Chicago and has been such I think about 12 or 15 years.

I don't know what the arrangement for compensation to the Illinois Bell was in respect to use of loops prior to
499 1930. There would be no special contract services of Long Lines in Chicago that does not use the plant of the Illinois Bell in Chicago to connect them up. Take a private wire between New York and Chicago. The customer
500 would be sold by the Long Lines Department in New York. The service between New York and his office in Chicago and the private wire would be exclusively for the use of that customer, and a so-called loop would be used at both ends; that is, a loop in Chicago and one in New York. These loops are connected with the toll line or telegraph service betwen New York and Chicago. The same relates to all the different services—telegraph, telephone, full time and short time, also for the program. The telephoto is not on the special service; it is an individual message service.

501 Since I have been connected with the Long Lines, we have put in the short period teletypewriter service. Prior to my occupying the position of manager of commercial department, Long Lines, Mr. A. W. Drake had that position. For how long, I don't know.

I will look up and give you the information as to how many radio stations there are in Chicago area using circuits regularly. I will also give you an idea of the temporary radio service or one night stand. I know there are a great number of radio stations in Chicago and that at times some of them are put on for one night and some are on the air every night. I think there are some airports in Chicago that have special service but I would have to look that up. That is regular toll, also teletype on special contract circuits for dispatch-
ing planes and giving weather advice to pilots. I don't
503 know the extent of any special service given to railroads at Chicago or of private wires leased to any electric

power company or pipe lines or concerns of that sort. There are form contracts for the special services which I will
504 furnish. There is one form covering permanent facilities and another form covering temporary facilities.

Defendants requested witness to furnish the revenues for the different services, including toll message for the years 1920, 1923, 1925, 1928, 1929 and 1930.

506 CLYDE UHRIG, for defendants:

Direct Examination by Mr. Haight.

I reside on Manhattan Island at 45 East 55th street. I am assistant comptroller A. T. & T. and have been for about 6 or 8 years; prior to that, I had similar duties with other titles for some years. That would take us back to 1920 or 1921.

I have before me an organization chart of the comptroller's department. (Marked Defendants' Deposition Exhibit 51, for identification.) According to that chart, I am assistant comptroller. The duties of the various divisions are broadly correctly described on that chart. My division, entitled
507 "A. T. & T. Company, General Department of Accounts and Reports" comprises the work on the general books of the A. T. & T. general department, and also to the extent that we combine long lines balances at the end of each month and year, the books of A. T. & T. as a whole; both balance sheet accounts and revenue and expense accounts—all accounts.

The words "Special Studies in Respect of A. T. & T. Company's Accounting and Financial Matters" means largely a projection of our earnings and cash positions over 6
508 months to a year, in order to be in a position to advise the comptroller and others among other things of the needs for raising capital funds.

The title "Allotments to Associated Companies and Matters Relating to Acquisition of Associated Companies Securities," covers loans to associated companies usually for construction purposes and is evidenced by demand notes which we carry along and commonly exchange for common

stock. Sometimes those notes and open account advances are repaid from the proceeds of bond issues of the Associated Companies.

The title "A. T. & T. Company, General Department Methods," relates to the best procedures in running an organization of 80 people which this comprises, accounting classifications, treatments and procedures, including financial, since we are very considerably involved in financial matters, loans, etc.

The "Supervisor of Methods" works with respect to methods above mentioned. The auditor is in direct charge of the general conduct of the activities of the office.

"Supervisor of General Bookkeeping" has immediate
509 charge of the books from which balance sheets and the income accounts are produced.

The title "General Books and Records, Real Estate," relates to property in this block, 195 Broadway. However, to the extent that the work is done directly for the 195 Broadway Corporation, such costs are borne by that corporation.

The title "Tax and Commission Reports" covers the compilation of tax and commission reports, reports to the Interstate Commerce Commission, the New York Public Service Commission and various State Tax Commissions.

The "Supervisor of Disbursements" covers 100% of
510 the disbursements of the general department, such as payrolls and disbursements under voucher authorizations.

The title "Special Assignments" covers rate case exhibits such as we have had recently at Columbus, Detroit, Chicago and so on and any other rush work which requires an exceptionally competent person. There is just one employe in that particular.

In the section "Supervisor of General Bookkeeping," there are about 30 people. They run not only the general
511 ledgers but they draw off from those ledgers a great many reports and other data required from the books. For example, all these exhibits that Mr. Heiss has put in, come almost wholly from those books.

Under "Methods and Special Assignments" are routine bookkeeping and reporting.

"Special reports, assignments, internal audits and allot-

ments" refers to cash estimates, earnings estimates, allotment forecasts.

"General books and records" covers the actual posting to the general books and the subsidiaries.

"Employes' Stock Plans for Purchase of Stock of A.
512 T. & T. Records and Reports," is the American Company's control of the stock plan in the various units of the Bell System as it converges up to the American Company.

"Files" refers to the filing, etc.

"Control Records and Reports" covers employes' stock plan, employes' savings plan by deductions from salary and the employes' life insurance plan; also by deductions from salary for A. T. & T.'s own employes as distinguished from System employes away from 195 Broadway.

"Payrolls and Deductions" relates to payrolls of the General Department covering 2500 odd employes.

"Vouchers" relates to payments other than payrolls to various creditors, all creditors other than employe payroll people.

"A. T. & T. Company General Department Accounts
513 and Reports" relate to A. T. & T. Company only as distinguished from Bell System.

"Special Studies in Respect of A. T. & T. Company Accounting and Financial Matters" relates to business of A. T. & T. and very particularly its business in relation to its associated and affiliated companies. At the present time that would consist of the earnings estimate for the year 1932, what our forecasts for earnings for the coming year are,—forecast of our cash position at the end of each month through 1932. All income of whatever nature enters into such an estimate. It relates to income to be derived from Western Electric and indirectly from E. R. P. I. but we have no financial contacts with E. R. P. I. Any money represented by earnings coming to us from any source, which earnings we were entitled to, would enter into such an estimate.

Referring again to "Assistant Comptroller" and "Al-
515 lotments to Associated Companies in Matters Relating to Acquisition of Associated Companies Securities," I would say that purchase of stock of an associated company by A. T. & T. technically would not be classed by us as an

allotment in that we get a special vote to acquire this new stock and allotments which consist of the lending being covered by a special vote, the two will overlap, if you class the last which you mentioned as an allotment. That will probably be regarded as a straight purchase of stock under a special vote of the Executive Committee or Board of Directors, and would not technically be called an allotment, although the proceeds of each of those capital operations go for construction.

My division issues a great many of what we call C. R. reports which are the general run of financial statements, balance sheet of the company, earnings report, expense reports, broken down by departments.

The allotment of funds for particular purposes is de-
516 termined by the associated companies. They send in at the beginning of each year, or rather at the last of each year, their forecast of their need of cash requirements for the subsequent year. Whether those forecasts come to
517 the comptroller or the head of the O. & E. department, or both I cannot say. They never come to me. The vote from the executive committee of the board of directors authorizing loans during the year up to a certain maximum for each company, comes to me. Until I get that vote, nothing is known in my department where any of the funds on hand are to be allocated. When the report of action by the executive committee of the board of directors or by the board of directors itself, comes to me to allot or to send to one of the associated companies certain funds, I don't know at that time how much is to be used to wash demand notes or how much is to be used towards the purchase of stock where no demand notes exist in the associated companies. However, in
518 practice it is very rare to buy stock outright where no debt exists because that would place the associated companies in possession of surplus funds which they could not use.

When it is determined that the American Company will acquire common stock of an associated company and such associated company owes the American Company money on demand notes or open account, the American Company will originate a voucher under which a check is drawn, to buy common stock of the associated company, and the associated

company, in turn, originates a voucher to use the proceeds of the sale of the common stock to pay off the notes.

We would not advance money unless we received either such a form of evidence of indebtedness or other authorized security that warranted us in our opinion to make the advance. If we purchased stock, the advance would not be classed as an allotment. Anything coming under the allotment vote of the executive committee is a loan, or an advance by way of indebtedness of the associated company
519 to us. That would be handled through the comptroller's department, but it would not be put under the classification by allotment. My division would originate a voucher supported by a specific vote of the executive committee, if it tied into an allotment authorizing the purchase of the stock, which purchase would be approved in its legal aspects by our general counsel.

Money employed to purchase the capital stock of the associated company would come from corporate funds, but not separately kept.

The allotment vote specifies that the money would go
520 out as loans either evidenced by demand notes or possibly carried along as an open account indebtedness. The capital stock purchases where no debt exists are not classed as coming under the allotment vote. Any other class of security that we roughly refer to as open account loan is distinguished from demand notes.

I have here a set of blanks. I recognize the first one, p. 2, of CR-1, CR-1a; CR-2 has been dropped. I recognize CR-3—balance sheet, and CR-3a. Several of these CR reports are not made up in my office but the CR series that include eight are made up in our office. CR-9 is made up in the office of the treasurer. These blanks are all comptroller's reports. These reports have various distributions among the executives. The first report CR-1 goes to the executive committee. About 90% of these reports are made up under my direction. The reports are as follows, the numbers and titles being given:

521 CR-1; title "Cash, Temporary Investments, Capital Stock and Convertible Bonds."

CR-1A; "Average Bank Balances for 30 days preceding . . . ," the date to be typed in there, "With Per Cent of Total

Average."

522 CR-3; "Balance Sheet, General Department."

CR-3A; "Bonds and Notes of, and Advances to, Associated and Other Companies."

CR-3B; "Loans Payable and Endorsed Notes."

3C; "Balance Sheet, General and Long Lines Departments Combined."

CR-4; "Earnings and Expenses for" to be followed by the period, the date.

CR-5; there is no title printed in it——

Q. 81. What is the general subject-matter, just a broad description of it will do.

A. It is stocks owned, principally.

Q. 82. Stocks owned by A. T. & T.?

A. Yes, there is a title "Investment in Associated and Other Bell System Companies."

CR-6; "Summary of Service Rolls as of" and then the date "With Changes Therein From" and then the date.

CR-7; "Estimate of Earnings and Expenses for..... Ending" and then in brackets below that "Quarterly Estimate for Dividends."

CR-8; "Estimate of Earnings and Expenses for..... months ending....."

CR-9 and CR-10 were not prepared by my division.

523 CR-12; "Dividend Revenues for the Year Ending ....."

CR-13; "Total Advances Authorized for.....and Payments thereunder for Year Ending....."

CR-14; "Cash Statement for Month Ending"—2 sheets, and a 3rd, with the same CR number but another subject-matter: "Bank Balances."

CR-14A; "Average Return on Bank Balances and Temporary Investments."

CR-15; "Preliminary Cash Estimate."

CR-15A; "Outline of Estimated Cash Allotments, Preliminary Cash Estimate."

CR-16; "Final Cash Estimate."

CR-16A; "Outline of Estimated Cash Allotments, Final Cash Estimate."

CR-17; "Comparison of Estimated with Actual Cash Transactions." One of those is by companies and the other

by classes; there are two forms of 17.

524 CR-18; "Ways and Means Statement, Year....."

CR-22; "Securities Pledged with Old Colony Trust Company."

CR-23; "General Department Expense Report for Month of....."

CR-24; "Summary of Departmental and Other Expenses."

CR-25; "Department of General Administration—Administration."

CR-27; "General Administration—Vice-President Wilson." "General Administration—General Service Bureau."

CR-29; "Department of Development and Research."

CR-30; "Department of Operation—Operation and Engineering."

CR-31; "Department of Operation—Personnel Relations."

CR-32; "Department of Operation—Benefit and Medical."

CR-33; "Department of Operation—Vice-President Cooper."

CR-34; "Comptroller's Department."

CR-35; "Treasury Department."

525 CR-36; "Secretary's Department."

CR-37; "Legal Department."

CR-38; "Information Department."

CR-40; "Bell Telephone Securities Company, Balance Sheet."

CR-41; "Bell Telephone Securities Income Statement."

CR-42; "Bell Telephone Securities—Analysis of Revenues and Expenses."

CR-43; "Bell Telephone Securities—Securities Owned."

CR-44; "Bell Telephone Securities—Expense Report."

CR-45; "Bell Telephone Securities—Cash Statement."

CR-46; "Bell Telephone Securities—Income Statement for .....Months ending....."

CR-48; "Report of Cash Purchase Agreements for

526 Shares of A. T. & T. Company Stock to Bell Securities Company."

CR-49; "Report on Installment Purchase Agreements for Shares of A. T. & T. Company stock to Bell Securities Company," and this CR-49 continues to deal with the foregoing report.

CR-49A; "Report on Installment Purchase Agreements for Shares of A. T. & T. Company stock to Bell Telephone Se-

curities Company." That is a continuation. CR-49A continued "Summary of Cancellations of A. T. & T. stock under Bell Securities Purchase Plan."

CR-9 and CR-10 are not made out in my division. The treasurer makes out CR-9 and I think Mr. Saxton, another assistant comptroller, or the treasurer, probably Mr. Saxton, makes out CR-10. There are some forms which have been in existence once and become obsolete. There are other reports in the comptroller's department, but these given concern my own division.

The sources upon which the different CR reports are made, which I have mentioned, are the general ledgers or the subsidiary ledgers in the comptroller's department, except, of course, the cash book, and we take the treasurer's cash
528 book and post it into our ledger.

We do not receive monthly reports from the various licensees, the associated companies, with possibly only one exception. Mr. Saxton, assistant comptroller, receives those.

CR-14, 1st and 2nd sheets, are forms for monthly report with respect to the subject-matter stated at the tops. They would give the total statement for the year to the extent that they purport to give it by these various classifications of receipts and disbursements.

The December statement for the year would show facts as to each of those particular items for the entire year. (The reports on the 1st and 2nd sheets of CR-14 for the years 1919, 1920 and 1921 requested by defendants; also, reports on form CR-16 and CR-18 for years 1919 to 1930, both inclusive, requested by defendants.)

We do not use the word "budget" in the general department in connection with our expenses, but we estimate
530 our expenses for the forthcoming year, and they are submitted to the president.

My division at the present is running an annual expenditure of approximately $275,000, with 80 people. As compared with 1923, the curve is up but I could not plot it for you.

I don't know of any forms of reports that used to be used and that are no longer used. I am quite sure my records would show that, if there have been any in existence corresponding to the missing numbers. I will check that and in-

form you.

531 I am not directly concerned in the make-up of the allotment. I simply act on the amounts as voted by the committee as the maximum to loan. If, for instance, the Illinois Bell owe the American Company $10,000,000 at the beginning of the year, that would not enter into the amount of the allotment vote. The new allotment voted would be over and above the indebtedness at the beginning of the year.

(Cross-examination of Mr. Uhrig reserved by Mr. Blackman until later.)

PIERRE W. SAXTON, for defendants.

533 *Direct Examination by Mr. Haight.*

I reside at 87 Summit Avenue, Bronxville, New York; I am an assistant comptroller of A. T. & T., and have been such since 1922. Prior to that I was in the Long Lines Department for a time as auditor of the Long Lines, from 1910 on.

I am familiar with the organization chart which has been identified here as Defendants' Deposition Exhibit 51. I am the P. W. Saxton appearing thereon. My division receives the current reports of the associated companies, Long Lines, and the General Department, and combines them into Bell System reports. They also receive the provisional estimates and make a similar consolidated estimate for the Bell System.

534 The current reports received from the associated companies cover data from the books of the company. The same is true with respect to Long Lines. The provisional estimates are prepared annually by the associated companies and the Long Lines as to their requirements for the ensuing year,—the construction which they will undertake and revenues and expenses which they expect. As a part of the provisional estimates, we receive information as to the probable cash requirements of the various companies and Long Lines during the ensuing year. At the present time they cover a period of three years. Not all detail is given for the

535 later years. That practice has existed for about three years. Prior to that time the period was five years, and

that practice went back as far as my service with the company.

"Bell System Reports" bring together the figures reported by the various associated companies, Long Lines and general department into Bell System figures, and they are distributed to the various heads of departments and the various members of the staff organization; very few to Western Electric,
536 perhaps two or three. There is a report as to station gain or loss which is furnished to, I believe, the president of the Western Electric, who also receives one or two of the over-all general Bell System Reports. The reason for furnishing them to Western Electric is that they ask for them. I believe the Western Electric people do get with the provisional estimate an estimate of material requirements that is summarized. The Western Electric is therefore furnished the statements which advises them as to the equipment requirements of the associated companies and of Long Lines. I don't think any of these reports go to the Long Lines.

I don't think I prepared any reports as assistant comptroller that go to the comptroller except in relation to the matters that I have already identified.

537 I am familiar in a general way with the reports made by the comptroller's department. I think the numbers run into the 90's. I have to do with making reports on those different forms. I have something to do with the report CR-10 in that it is prepared under my direction. I don't have anything to do with CR-9. I have a number of forms of reports which, generally speaking, are either consolidated reports of the Bell System Companies or reports showing comparative figures as between the various companies.

538 I have to do with the making up of reports in the following forms:

CR-51; Condensed Summary of Reports for .....

CR-51a; Condensed Summary of Reports for ..... excludes A. T. & T. Company Long Lines Department.

CR-51b; Associated Operating Companies Percent Balance Net Profits after preferred dividend to average common stock.

CR-51c; Bell Telephone System in United States, Earnings and Expenses.

CR-52; Associated Operating Companies, excluding A. T.

& T. Company, Long Lines, Distribution of Total Net Earnings for Month of .....

CR-53; A. T. & T. Company Earnings on Capital Stock.

CR-53a; Bell Telephone System in U. S.

539 That refers to the interest of A. T. & T. Company in the assets of the Bell System and the value per share of A. T. & T. Company stock.

CR-54; Bell Operating Companies Comparison of Results for ..... Months of this year with same period last year.

CR-54a; Comparison of Results for ..... Months This Year for Same Period Last Year.

CR-55; Bell Operating Companies Present View for..... Months as of ..... Compared with Actual Results.

CR-55a; Bell Operating Company's Present View for .... Months as of ..... Compared with Actual Results for .....

CR-60; Bell Telephone System in United States, Balance Sheet ..... Date.

CR-61; Income Statement for Month of.....

CR-62; Telephone Operating Revenues Report for Month of .....

CR-63; Telephone Operating Expense Report for Month of .....

CR-64; Plant General Equipment and Intangible Capital Report for ..... Months ending .....

CR-65; Report of Station Circuits and Central Offices for Month of .....

540 CR-65a; Net Gain in Company Stations.

CR-65b; Report of Plant Mileage and Other Data for ..... Months Ending .....

CR-66; Plant and General Equipment Added, Removed or Abandoned for ..... Months Ending .....

CR-67; Comparison of Actual Results with ..... View for Months of ..... to .....

This report shows a comparison of the actual results of operation with the latest previous view.

CR-67a; Review of Provisional Estimate as of ..... Date (there are 3 sheets under that title).

CR-67b; Present View of Next Year .....

CR-71; Report on Reserves for Accrued Depreciation and for Amortization of Intangible Capital for Period Ending .....

CR-72; Report of Certain Clearing Accounts for Month of ..... 2 sheets).

CR-76; Statistical Units for ..... Months Ending .....

CR-86; Unit Expenses for ..... Months Ending .....

CR-87; Employes and Benefit Payments for Month of ..... (3 sheets).

CR-89; Report of Payroll Changes for Month of .....

541 CR-90; Funded Debt ..... Date Bond Maturities by Years.

Those refer to A. T. & T. Company bond maturities. The entire system.

CR-91; Results of Operations by States, Annual Basis. Revenues and Expenses for Average Company Stations and Percentages (2 sheets).

CR-92; Commercial Department Expense Report for Month of .....

CR-94; Current Maintenance Expense Report for Month of .....

CR-95; Supply Turn-over and Gross Supply Investment per Average Company Station for Quarter Ending .....

CR-96; Analysis of Charges and Credits to Account 264, General Stable and Garage Equipment and Account 702 Stable and Garage Expense Year of .....

CR-97; Statement Showing General Statistical Data for the Bell System Including Construction Items, Revenues and Expenses, etc.

Those were prepared by me or in my division under my direction.

CR-88, entitled "A. T. & T. Company Employes Stock Plan Participation by Employes of the Bell System" is prepared by Mr. Uhrig.

542 I will check over and see what forms, if any, were used previously that are not here and are not now used—as far back as 1923.

CR-52, entitled "Associated Operating Companies, excludes A. T. & T. Company, Long Lines, Distribution of 543 Total Net Earnings for Month of ..... 1931." relates to the various operating companies of the Bell System, excluding Long Lines, and it is made up from reports of the various companies concerned, which reports are still in

existence covering many years.

I cannot say to whom CR-52 goes, but my division has a distribution list which shows where all the reports go. I think there is one also for the Comptroller's Department generally and one for each of the divisions.

Chart entitled "Distribution of July 1931, Bell Telephone System Comptroller's Report," is the distribution chart for my division, except as to CR-88, which is not prepared in my division. (Chart marked Defendants' Deposition Ex-
546 hibit 52 for identification.) According to the distribution chart, various persons are to get different reports as indicated, such as directors of A. T. & T., executive committee of A. T. & T., C. P. Cooper, Vice President A. T. & T. W. S. Gifford, President A. T. & T. Mr. Cooper has charge of the accounting and finance. C. A. Heiss, Comptroller
547 A. T. & T.; B. Hamilton, Accountant in my division; J. F. Behan, Assistant to Comptroller A. T. & T.; H. Blair Smith, Treasurer A. T. & T.; T. H. Brown, Jr., in Treasurer's Office A. T. & T.; E. J. Clark, Assistant Treasurer A. T. & T.; C. Uhrig, Assistant Comptroller A. T. & T.; J. W. Green, Auditor A. T. & T.; J. A. Nixon, Assistant Comptroller Uhrig's division; E. V. Cox, Vice President in Cooper's organization; S. L. Andrew, Chief Statistician, A. T. & T.; D. R. Belcher, Assistant Chief Statistician, A. T. & T.; P. W. Saxton, Assistant Comptroller A. T. & T.; H. J. Brandt, Benefit and Medical Department A. T. & T.; Bancroft Gherardi, Vice President A. T. & T., O. & E. Department; R. H. Burcher, O. & E. Department A. T. & T.; E. S. Wilson, Vice President A. T. & T.; K. S. McHugh, O. & E., A. T. & T.; W. H. Harrison, O. & E., A. T. & T.; E. S. Bloom, President Western Electric; E. F. Carter, Vice President A. T. & T.; W. J. O'Connor, Assistant to President, A. T. & T.; H. L. Wlodeck, in assistant comptroller Behan's department; R. B. Shaver, Assistant Comptroller, A. T. & T.; G. B. Proud, Western Electric; R. E. Cowley, Western Electric; M. B. French, O. & E. of A. T. & T.; H. A. Trax, general auditor New Jersey Bell Telephone Company; H. C. Gretz, General Auditor Ches. & Pot.
549 group of Telephone Companies; G. J. Brett, General Auditor, Michigan Bell Tel. Co.; R. P. Baird, General Auditor Northwestern Telephone Company; N. R. Powley, Vice President Pac. Tel. & Tel. Co.; F. N. Rush, Vice President

Pac. Tel. & Tel.; all presidents of the Associated Companies; W. J. Stout, Assistant Treasurer A. T. & T.; A. H. Richardson, in Chief Statistician's Division A. T. & T.; W. A. Mason, R. F. Wolff—I don't remember their titles; J. A. Griffin, in Assistant Comptroller Behan's division; Z. Z. Hugus, O. & E.; I don't know E. S. Wilson's department nor E. F.
550 Carter's, but I will look that up and let you know.

The distribution chart I have been examining is the current chart and I think that running over the years there was a similar distribution chart.

G. B. Proud is assistant comptroller Western Electric;
551 I don't know Mr. Cowley's position in the Western Electric.

With respect to CR-52, there is certain information under the titles "Net Telephone Earnings" and "This Month, Increased over last Month, Months this Year, Increase over same Period Last Year," given, which information is furnished by the various associated companies. The same source exists as to "Total Net Earnings," in that all the data contained in CR-52 is obtained from Associated Companies Reports. Net telephone earnings to average plant in service during 1931 and same period last year comes from the same source.

In compiling the figures under the title "Average Plant in Service during 1931" and the same period previous years,
552 there is not included construction work in progress. The purpose of the report is to show a comparative statement by companies of the various items and they are all on a comparable basis.

553 Respecting report CR-53 the source of the information given under the head "Dividends from Associated Operating Companies" are reports of the general department as to earnings, Mr. Uhrig's division. The source of the information on the undivided profits is the report of the operating companies. "Interest from Associated Operating Companies" is obtained from our own reports; "Licensee Revenue" is obtained from Mr. Uhrig's report; "Long Lines Net" from reports of Long Lines; "Dividends of the Bell Telephone Company of Canada and Western Electric Company, Inc."—reports made up by Mr. Uhrig. "Other Revenue"—Mr. Uhrig's report. "Other Revenue" means miscellaneous items

other than those mentioned.

554 There is another statement "Assuming that the expenses of the American Company, General Department, are paid from licensee revenue, the 9% dividend is derived from the following source," which latter statement refers to the 9% dividend of the A. T. & T. upon its stock.

The item "From Other Revenue" is a small item and is the same sort that appears above.

At the bottom there is another legend "Associated Operating Companies (excludes A. T. & T. Co. Long Lines Department)" and under that there is a further legend "Comparison Net Telephone Earnings to Average Plant in Service" and underneath that there is another legend "Balance, Net Profits after Preferred Dividends to Average Common Stock." I cannot say whether those items have been kept during the full time I have been in my division. I don't know how far back they go.

557 BANCROFT GHERARDI, for defendants:

Direct Examination by Mr. Haight.

I reside at Short Hills, New Jersey; I am Vice President and Chief Engineer of the A. T. & T. and have been connected with A. T. & T. since 1907; prior to that I went to the Polytechnic Institute at Brooklyn and graduated scientific course 1891, degree of B.S.; I then went to Cornell and took an electrical engineering course, graduating in 1893. I went back there for postgraduate work and received Master's degree in 1894; I then went to work with the New York Telephone Company, then Metropolitan T. & T. Co. in February 1895 and continued with that company until 1900 or 1901, when I

558 went to Brooklyn as chief engineer of the New York & New Jersey Tel. Co., now part of the N. Y. Tel. Co.; it operated all of Long Island and all of New Jersey; I was there until March 1906; at that time the operating organization of the New York Tel. Co. and of the New York and New Jersey Tel. Co. were consolidated, and I became chief engineer of both companies, which position I held until 1907, when I went with the A. T. & T.

I have been Chief Engineer, my present position, from 1919 and became Vice President in 1920 or first part of 1921; from 1907 until 1919 I had no definite title until April 1909, after which time my title became Engineer of Plant.

Defendants' Deposition Exhibit 53 for identification, consisting of 7 sheets, is the organization diagram chart, Engineering Department of Department of Operation and Engineering of the A. T. & T. The Engineering Department of the A. T. & T. does not itself operate anything. It advises and suggests to the Associated Companies and the Long Lines in the operation and engineering work which they do. The department has nothing to do with the purchase of operating properties. It advises as to the types of equipment, of apparatus and arrangements which can be most effectively used to meet various conditions in connection with operation.

There is uniformity in telephone equipment maintained throughout the Bell System. That is brought about
560 through the fact that there is a common agency through which such equipment is designed and developed and through the fact that there are recommendations made as to the methods in which the equipment shall be used. The agencies concerned are the O. & E. Department, Dev. and Research Bell Tel. Lab. and the Western Electric. The O. & E. Department through its constant touch and advice which it gives to the Associated Companies, obtains familiarity with conditions existing in the Associated Companies and the Long Lines, and is in a position to and does advise the Department of Dev. & Research as to the needs of the operating system or as to the troubles which may exist with regard to the existing methods and devices.

561 The O. & E. Department does practically no invention work. Occasionally, but very rarely, in its efforts to improve or to standardize or to solve problems or meet new conditions, it evolves inventions. The O. & E. Department generally works out what might be called the operating methods. It is then the duty of Dev. & Research or Bell Lab., or the two working together, to develop the necessary instrumentalities. If the methods need new instrumentalities, then it is their object to develop those. The Western Electric
562 of course manufactures the equipment and has a part in dealing with the laboratory to discuss with the laboratory

the practicability of anything which the laboratory may propose for use. Very seldom, however, does the O. & E. Department in connection with its general work in the system, advice Western Electric. The O. & E. Department's principal direct connection with Western Electric is when the Associated Companies need anything which, for any reason, may be difficult to get at the time the Associated Companies want it, or the Long Lines want it, to help the Associated Companies get it.

There is no place where the final authority on questions of standardizations reside. There are places where the responsibility for recommending standards arises, but that au-
563 thority does not carry with it the power to enforce the use of those standards. The O. & E. Department determines standardization for the apparatus, circuits and systems and also operating methods which applies to both the Long Lines and Associated Companies. The O. & E. Department advises the Associated Companies as to the best and most effective methods of making fundamental plans. It discusses with them the matter of difficult questions that come up in the making of those plans and consults with them as to the results of the plans if the Associated Companies desire such consultation.

Naturally all fundamental plans must assume some switching methods, some types of equipment to be used, because all a fundamental plan is, is a method to estimate from 15 to 20 years ahead what your arrangements will be to take care of the business. Some basis of taking care of the business as to operating methods and as to type of equipment must underlie a fundamental plan. And naturally the only practical basis upon which a fundamental plan can be made is to use the then best known methods and equipments as the basis of the plan.

564 The needs of long distance service of immediate character and future needs practically have no effect in the development of a local fundamental plan. There is no especial necessity for conforming the equipment in a local fundamental plan to serve in long distance service. A local plan as such can be developed in utter disregard of any long distance service requirements. However, the long distance service requirements are necessarily considered in what is known as

the toll fundamental plan. The toll fundamental plan does not concern itself with local equipment.

565 There is no definite relationship or necessity for relating toll fundamental plans with local fundamental plans, except for one thing,—they naturally ought to be consistent as to magnitudes; and at the moment I do not think of any necessity for any relationship between local fundamental plan and the toll fundamental plan in respect to equipment. The relationship on account of magnitude comes about in this way. If you are making a plan for any given place for 20 years from now, you have to allow for the estimated growth in that place in that period. While they are not the same there is some relationship between the growth of the local business and the growth of the toll business to be expected in 20 years. If the plans are made for the same period there should be that general consistency in their magnitude.

When I speak of toll business, I am referring to both that of the Long Lines and that of the local company. The

566 O. & E. Department has assisted and cooperated with Illinois Bell, in the making of fundamental plans. That assistance and cooperation has been, of course, of the same general character as assistance and cooperation with reference to fundamental plans of other companies, but every fundamental plan differs as to local conditions. In many cases the O. & E. Department reviews the fundamental plan after it is completed by the Associated Company and makes suggestions, recommendations or criticisms that might occur, if it is thought that the plan is not the most effective one that could be devised.

567 Of course, the benefit of our experience on all preceding fundamental plans is brought to bear on the Illinois Bell plans if we assist on them and others and that experience which we got there is added to our previous experience in regard to all subsequent plans.

There is a relationship between the fundamental plans of the different companies one with the other, in that they are all handling telephone business. Telephone business has certain similarities even in different places. There are different conditions in every place. There are some general conditions of similarity so there is that relationship to be found between the plans. These plans are dealing with, generally speaking,

similar problems in different places and where conditions vary. On the other hand, the result of a fundamental plan in one place does not affect the fundamental plans in another place unless the places are adjacent to each other, so that they are in effect parts of the same local community.

568 I don't know of anything that can be characterized as a program or fundamental plan in existence that relates to the entire country, as far as the Bell System is concerned. Perhaps a very large number of plans taken together might be so considered. The objective of the number of plans taken together would be to take care of the telephone business of the country today and tomorrow.

As to whether as an engineering proposition there is any necessity for coordinating these associated companies or the fundamental plans, I would say that if engineering is to
569 be considered as doing things in the best way from the physical standpoint, I would say there was, the general reason being that engineering wants to do things in the best way and to the extent that the conditions and the general problems that they are dealing with is the same. There is a general similarity between what constitutes the best and that constitutes a tie between them.

In the event that a Chicago fundamental plan called for a grounded circuit with iron wires, I would say that if such a thing were called for by the dictates of good engineering, the thing to do would be to provide the necessary arrangements in order that they could be used. I could not, however, conceive of conditions under which I would approve of such a plan in the City of Chicago under the present state of the art, the reason being that there are very serious objections to grounded circuits, particularly where they have to be operated in cables, and pretty nearly all the Chicago telephone plant is in cables. Condensed, the reason is that one could not give good telephone service over grounded circuit in Chicago. I would not, however, take into consideration any requirements of long distance service in that connection. I would say, broadly speaking, that if the local plant is built so that it will take care of the local conditions, the requirements of the local plant have been satisfied, from an engineering standpoint.

The assumption that "if the local plant is developed
570 to any extent to care for long distance connections from the standpoint of local service, that would be an unnecessary development" is contrary to the fact. I think it is a correct assumption that there is no relation to the development of local plants and long distance plants, except as it relates to magnitude, although of course there is a relationship arising from this fact that it is an advantage to the local plant in its own development that it shall be able to give the most extensive service possible.

If at each local plant you succeed in giving satisfactory local service, then as far as the local plant is concerned the conditions are satisfied to enable a nation-wide service to be given so that a person in any part of the country can talk to any other person in the country without limitations of distance or property ownership. No coordination is necessary, except in the sense that coordination may mean having adequate standards of local service. In that latter sense coordination is necessary.

571 During the time that I have been doing telephone engineering there have been improvements in construction methods that have had an effect upon the construction of telephone plants in a city like Chicago. Such improvements are underground cables, switchboards, design and the arrangement of buildings, conduits, substation equipment.

572 There have been improvements in tools and improvements in the methods of doing the work and improvements in the organization by which the work is directed, which relate to actual construction work. Improvement in tools are tools used for adjusting the various types of apparatus; tools which installation and construction people use in the doing of the work. There have been improvements in the instrumentalities such as motor vehicles and things like that, used in transporting people and materials to the job. Tools for adjustment are very numerous. I would have to refresh my recollection before answering that in detail. As an illustration, I will refer to the tools which we use for properly adjusting the subscriber's bell at subscriber's station in
573 order that the instrument may always be in the very best condition for use.

Another outstanding one is the tools for the adjustment of

spring jacks in switchboards. In the construction of pole lines there have been improvements in motor vehicle equipment, including the providing of trench digging machinery and pole-placing machinery which is used in the construction work under telephonic conditions. This has resulted in making the construction of pole lines more economical. These economies are substantial. I would have to refresh my recollection, however, as to figures. The amount of the decrease in cost would vary to some extent in different parts of the country.

574 The method of construction of manholes, the arrangement devised for the construction of manholes, have diminished the cost of manhole construction. We do not develop switchboard installing methods, but I do know that improvements have been made, but I could not state just when.

About 1920, but I could not place the exact date, I think there were improvements in regard to avoiding the assembling of all the parts of the switchboard in the place where it was to be erected, saving cost of installation. The older method of assembling switchboards used to be to ship switchboards in the various parts and to do a very large amount of the 575 assembling on the job. About 1920 I think it was, plans were modified so that a great deal could be done in the way of assembly work and adjusting work in the factory and parts were shipped in larger units, thus requiring less work in putting them together at the local exchange where they were being installed. I don't know how that has affected savings, but I could refresh my recollection on that.

When I speak of automobiles in connection with the installation of pole lines, I referred to that as well as other construction. I had in mind, for one thing, that automobiles in the local exchanges, equipped with all the necessary materials that are needed for the installation of stations and the installation of Private Branch Exchanges, require special designs of one kind or another and so material can be stored away in such ways that it can be immediately accessible and those designs have been prepared and arrangements like that have been made available to the associated companies. For the pole line construction there is, of course, the problem of transporting the pole, transporting the cable and digging the hole

for the pole. For placing a cable especial automotive
576 machinery has been designed for that kind of work and is used by both the associated companies and the Long Lines.

Sometimes these improvements in tools for construction have cheapened construction costs and sometimes they have resulted in better construction and sometimes both. These improvements in construction would affect a good many of the different constituencies of telephone plant. Generally speaking, improvements in methods of work extend throughout the entire plant.

Taking the improvement movement in construction as
577 a whole, that has been going on right along. It has been a continuous evolution for a good many years. At one time a particular thing may come to fruition, at another time another thing. Generally speaking, it has been a concerted movement and resulted in the development of better and cheaper tools with which to apply those methods. I should say since the war there has been relatively more accomplished.

With reference to organization, I perhaps can give you an illustration. There used to be a time when stations would be installed by having a couple of men go around there with the station equipment, the bell box and everything else that was necessary and put it in then and there. Methods have been developed and this is primarily an organization matter by which all of the various tools and equipment have been brought to the station and one man goes around there
578 and installs it. Generally speaking, if you can do a lot of construction work in one operation, it is cheaper than if a little piece is done here and then another little piece and then another little piece, done at different times, assembling the material, arranging the organization and making the plans each in little bits.

Generally speaking, I am familiar with work done under the terms "specific estimates" and under "routine estimates." When a large job is done, it is done under a specific estimate. For example, if a new building is to be built, a new conduit is to be built, a new cable is to be laid, of reasonable magnitude, a specific estimate is prepared for that work. There are considerable quantities of such work such as the small work of

installing and moving stations and installing and moving
579 private branch exchanges and bits of other things which are going on all the time and where the individual jobs really have no special,—when no specific estimates can be prepared. It would cost more to prepare the specific estimate for installing a single station than it would to build the station, so a routine estimate is an estimate prepared to cover a lot of small items of the same general character. You might prepare a routine estimate to install 10,000 new stations or you might prepare a routine estimate covering all the new stations to be installed during the next three months. The usual practice is to prepare routine estimates covering the estimated requirements for a given period of time rather than to cover a given amount of work.

There have been improvements made with reference to the construction of conduits since 1914, such as trench dig-
580 ging machinery, machinery for breaking up pavements, for tamping back over the trench after it is filled, things of that type. There has been a good deal done along that line since the war. So far as that single factor is concerned, it has reduced the cost of construction. Yet the trend of the other things that go into those costs may be such that the final costs are larger than they were before. But so far as improvements in methods of installation and improved equipment employed to install are concerned, they have cheapened the costs of construction or have done a better job. My department makes studies of provisional estimates of Associated Companies.

581 The provisional estimates reflect the expected operating results of the companies during the succeeding year in considerable detail and then for a year or two after that in somewhat more bulk. We review the provisional estimates in order to advise the operating companies and the Long Lines and to comment to them on the basis of the operations which they are proposing.

The Illinois Bell prepares the provisional estimates for Chicago. It is an organization work. The organization as a whole of the Illinois Bell is pretty much involved in the preparation of provisional estimates. There is no one in our organization that has particular charge of Chicago.

There is a little work in our organization done in con-
582 nection with the expected plant operating results which will come in the Plant Department from the provisional estimate as submitted. We make use of the provisional estimates sent to the A. T. & T. in that we study them and advise the Associated Companies with respect to the basis upon which they are planning their operations for the succeeding year. The advice is for the purpose of arriving at the best and most economical basis to operate the companies and to give good service. There are variations in gang efficiencies. Where gangs use the same methods, sometimes the variations are due to extraordinary conditions. Some gangs may be working under more difficult conditions than other
583 gangs and they may be working under worse weather conditions and there may be other conditions which are different. As gangs are made up of human beings, there are necessarily variations in the gangs themselves. Since the war, generally speaking, there has been improvement in gang efficiency. A number of things have brought that about, such as better organization for carrying on the work, more effective planning in the ordering of the work so that the gangs have less lost time, better methods and better tools; sometimes better apparatus and equipment that require less work.

In a general way it has been often possible to change the number of gangs to get more effective results when gangs are provided with new and different types of machinery. The general effect of that is to change the size of the gang. For instance, it takes a large gang to build a conduit if the trench is to be dug by hand. A smaller gang will suffice to build that same conduit if the trench is dug by machinery. The methods and sizes of gangs are often quite closely related. By improving gang efficiency, we have been able not only to do better work but we have been able to reduce construction costs, considering that factor isolated. Of course, many other factors go into construction costs but as far as that single factor is concerned, it is so.

(Right to cross-examine reserved until later.)

585 PIERRE W. SAXTON, recalled:

Further Direct Examination by Mr. Haight.

The official files referred to in the distribution chart are kept in my division, Room 2409 of this building.

Mr. Haight: I would like to have produced by the witness for each of the years 1919 to 1930, both inclusive, C. R. Reports 51, 51a, 51b, 52, 53, 53a, 54, 54a, 55, 55a, 65, 65a, 65b, 66, 67, 67a, 67b, 76, 86, 91, 92, 94, 97.

Mr. Blackman: Some of those reports mentioned the court sustained objections to recently. I can state definitely now that as to anything the Illinois Court ruled upon in accordance with our contention that you did not have the right to examine that, we will not have the witness produce now.

After 15 minutes' recess Mr. Blackman further stated:

588 I have examined our records and find that as to C. R. 51 and 51a, we have agreed to let you have them and we have sent for them and they will be here in a moment. As to the others I can find no record of any request for the other reports. Mr. Bracelen is ill today, and he may have a record of those requests.

589 Mr. Haight: Mr. Blackman has now produced what I understand to be the condensed summary reports C. R. 51 and 51a for the years 1919 to 1930, both inclusive.

Defendants offered C. R. Reports 51 and 51a in evidence, to which plaintiff objected on the ground that they were irrelevant, the exhibit number and the C. R. Report for the year corresponding, being indicated as follows:

C. R. Report 51 —1919—Defendants' Deposition Exhibit 54
C. R. Report 51 —1920—Defendants' Deposition Exhibit 55
C. R. Report 51 —1921—Defendants' Deposition Exhibit 56
C. R. Report 51 —1922—Defendants' Deposition Exhibit 57
C. R. Report 51 —1923—Defendants' Deposition Exhibit 58
C. R. Report 51 —1924—Defendants' Deposition Exhibit 59
C. R. Report 51 —1925—Defendants' Deposition Exhibit 60
C. R. Report 51 —1926—Defendants' Deposition Exhibit 61
C. R. Report 51 —1927—Defendants' Deposition Exhibit 62
C. R. Report 51 —1928—Defendants' Deposition Exhibit 63
C. R. Report 51 —1929—Defendants' Deposition Exhibit 64
C. R. Report 51 —1930—Defendants' Deposition Exhibit 65

C. R. Report 51A—1919—Defendants' Deposition Exhibit 66
C. R. Report 51A—1920—Defendants' Deposition Exhibit 67
C. R. Report 51A—1921—Defendants' Deposition Exhibit 68
C. R. Report 51A—1922—Defendants' Deposition Exhibit 69
C. R. Report 51A—1923—Defendants' Deposition Exhibit 70
C. R. Report 51A—1924—Defendants' Deposition Exhibit 71
C. R. Report 51A—1925—Defendants' Deposition Exhibit 72
C. R. Report 51A—1926—Defendants' Deposition Exhibit 73
C. R. Report 51A—1927—Defendants' Deposition Exhibit 74
C. R. Report 51A—1928—Defendants' Deposition Exhibit 75
C. R. Report 51A—1929—Defendants' Deposition Exhibit 76
C. R. Report 51A—1930—Defendants' Deposition Exhibit 77

On the back of C. R. 51 for the year 1922, there is a note to the item of undivided profits for the year shown on line 29 on the face of the report which states that the item "in-
594 cludes revenues held in reserve pending rate decision as follows":

595 Then is given the names of certain companies and the amounts opposite each. That information came from the report of the various companies. Below that there are two notes, the first one indicating that the figure of average capital obligations shown on line 33 on the face of the report, includes the capital stock installments; the second note indicating that the item of average capital stock shown on line 34 on the face of the report excludes capital stock installments.

C. R.-52, C. R.-51 and C. R.-51A are made up from the same sources. Information contained on C. R.-52 is not used in making up reports C. R.-51 and C. R.-51A

Referring to C. R.-52 there is the title "Distribution of Total Net Earnings for Month of ....." I cannot say as to whether we have for the entire period that I have been in charge of my division, C. R.-52 Reports. How long I have been regularly engaged in making up this report,—I would have to refresh my recollection. Those reports are regularly distributed as indicated in Distribution Chart Defendants' Exhibit 52 for identification. The list of companies whose names appear in the left-hand column of C. R.-52 are the associated companies of the Bell System. These reports show the net telephone earnings for each of those companies and also the total net earnings with the exclusion of duplications. With the same qualification that duplications are excluded,

the reports show the average plant in service during the time indicated upon each of the reports.

The information contained in C. R.-53 Reports is not used in making the C. R.-51 or C. R.-51A Reports. I think these reports C. R.-53 were used when I first took up my present position. The reports made up in my division are placed in an official file and are preserved. I will find out how long C. R.-52 and C. R.-53 have been used. C. R.-53 is not used in making up the other C. R. Reports. C. R.-53A has information called for by the form and for the various years indicated. I don't remember when we commenced using 53A but I will refresh my recollection.

C. R.-54 is not used in the compiling of Reports 51 or 51A. I will refresh my recollection as to how long C. R.-54 has been used. The same answer as to C. R.-54A as for C. R.-54.

601 The same answer as to C. R.-67. The same as to 67A; 67B; C. R.-76; C. R.-86; C. R.-91; C. R.-97. The information in those reports is not used in company reports C. R.-51 and 51A.

I will check up and ascertain as to how the different reports have been changed, if any.

604 The same answer as to C. R.-94 and C. R.-97.

The general subject matter of the different reports has remained the same. I will check up on all that.

606 C. R.-52, C. R.-53 and C. R.-53A were first prepared in 1920; C. R.-54 was prepared since a date prior to 1919. Prior to 1931 the title to this report was "Comparison of Provisional Estimate and Actual Results (Excluding Purchases, Sales and Transfers) for ..... Months Ending ....."

C. R.-54A first prepared in 1925; prior to 1931 the title to this report was "Comparison of Provisional Estimate and Actual Results (Excluding Purchases, Sales and Transfers) for ..... Months Ending ....."

C. R.-67 was first prepared in 1927 in its present form. Prior to 1927 the report known as C. R.-67 was a consolidated Bell System payables report. Such a report is no longer in existence.

C. R.-67A was first prepared in 1928; C. R.-67B in 1931; C. R.-76 and C. R.-86 were prepared since dates prior to 1919. C. R.-91 was first prepared in 1920. C. R.-97 was first prepared in 1931.

The difference between C. R.-51 and C. R.-51A is that 51 is a consolidated report for the Bell Telephone System in the United States, including Associated Companies, Long Lines and A. T. & T. General Department. C. R.-51A is a report for the Associated Operating Companies excluding Long Lines and General Department. Only the United States is covered in those two reports, except that as to C. R.-51 it includes revenues in the form of dividends received from the Bell Telephone Company of Canada.

608 The source of the information contained in C. R.-51A are the reports received from Associated Companies, which reports come on standard forms. I believe that the information appearing upon 51A comes from the same form from each of the Associated Operating Companies and the information appears on a monthly report form. The report is prepared from more than one of the reports of the Associated Company. It is a summary of the reports from all the companies as indicated. Reports of the different companies are of the same character upon these forms.

Speaking for the moment of one of those companies, the information on C. R.-51A comes from a plurality of reports on forms.

C. R.-51A is the same as monthly report No. 1 for the individual company.

609 It is fair to say that C. R.-51A is a summary of monthly reports No. 1 from each of the several Associated Companies, with the qualification that duplications are excluded.

Referring to Blank Form C. R.-51A used in the year 1932, and line 42 thereof, there appears in parentheses the words "except Adv. and Dir.," which means "except Advertising and Directory."

610 Referring to line 37 of C. R.-51A for the year 1923 and the same line of C. R.-51 for the same year, it is my understanding that total telephone revenues to average plant in service there indicated, does not exclude the items in the parenthetical clause referred to in the form now in use.

The item on line 31 "Average Plant in Service" of C. R. Reports 51 and 51A for the year 1923, has had no deduction for depreciation reserve, but excludes construction work in progress.

The items in lines 1 to 5, inclusive, of C. R.-51 and 51A are

taken from the books and are ledger values of the Associated Companies.

611 We do not use the monthly report No. 1 in summarization to get these figures appearing on C. R.-51 and C. R.-51A as these are condensed summaries. The various lines on this report consolidate several accounts in each case and in preparing our consolidated summary, we go back to what may be termed the original sources,—the other reports of the company, which reports are of revenue and of plant in general reports which give more detail than monthly report No. 1. The reports used in preparing C. R.-51 and C. R.-51A are monthly reports No. 2, balance sheet, monthly report No. 3, income statement for month of ....; monthly report No. 4, telephone operating revenues report for month of ....; monthly report No. 5, telephone operating expense for month of ....; monthly report No. 7, on station circuits and central offices for month of ....; monthly report No. 21, plant and general equipment added, removed or abandoned for ..... months in .....; monthly report No. 23, report of operating changes for month.

In addition, certain items are obtained from monthly report No. 1, condensed summary of reports for ..... month. There are no additional reports used to compile C. R.-52.

As to C. R.-53, I am not quite sure whether additional reports are used.

As to C. R.-53A, I think we would need certain other information for that report which is obtained, I believe, from a report by Mr. Uhrig's division, and we would obtain

613 from that report the per cent of interest of the American Company in the various Bell System Companies.

C. R.-54 and 54A can be compiled from those reports I have mentioned. The information on C. R.-67 is obtained from monthly reports No. 22A of the Associated Companies, entitled "Comparison of Actual Results with ..... View for ..... Months of ..... to .....," and that report is in the same form as C. R.-67.

The information contained on C. R.-67A is obtained from the monthly reports No. 22B of the Associated Companies, entitled "Review of Provisional Estimates as of ..... date" and 22B is in the same form as 67A.

The data for C. R.-67B is obtained by summarizing Re-

ports No. 22C of the Associated Companies, which is the same as 67B.

C. R.-76 and C. R.-86 are made up from the same monthly reports as used in the preparation of C. R.-51 and 51A. C. R.-91 deals with the results of operation by states. Therefore, for those companies operating only in one state, the information can be obtained from the same sources as are used
614 in the preparation of C. R.-51 and 51A. When companies operate in more than one state the information is obtained from a report from the Associated Company, the number of which report I do not recall. C. R.-97 is a report for the Bell Telephone System in the United States and the figures are obtained from other C. R. Reports referred to.

The various reports identified as to sources have all been kept on file in the offices of A. T. & T.

Mr. Haight: I ask that the witness produce the various reports from the various Associated Companies for the years 1919-30, both inclusive, stated by the witness to have been used as the sources of information in preparing C. R.-51 and 51A for each of the years in question; also Reports 22A, 22B and 22C and special report for C. R.-91 covering the same period of years.

Mr. Blackman: I would like to consult Mr. Bracelen about that before answering. Of course it is the policy of this company as far as possible to furnish all necessary papers, but I might say here, if those documents are the ones from which you could get the information that we have already denied you, I would be disposed to deny them also, but we will advise you.

The Witness (continuing): Other divisions of the Comptroller's Department than my division, receive copies of some of the reports. Monthly Reports No. 1, 2, 3, 4, 5, 6, 7, 22a, 22b and 22c and special report for C. R.-91 are all received by my division, and in some cases more than one copy is received.

I cannot say at the moment to whom the additional copies
617 go. I think Mr. Morello in my division handles the distribution of them. I assume they come by mail, but I
618 never checked that. It might be that the reports come to Mr. Heiss first, rather than to me. However, my division gets all the copies if there is a plurality of copies, and I think whatever distribution there is is made by my division. I am quite sure there is a record kept of the distribution of

these monthly reports of the Associated Companies that come to my division. The record of that is kept in my department and under my direction.

Mr. Haight: I would like to know what that record shows and what the fact is. I am going to ask the witness either to do it or I am going to ask Mr. Blackman to let us call Mr. Morello. I just want to show the facts.

Mr. Blackman: Yes, well—

Mr. Haight: Either way is all right.

Mr. Blackman: So far as I am concerned, I will facilitate your raising the point—

Mr. Haight: Yes.

Mr. Blackman: In so far as that bears on those matters that we are not inclined to give you information about, why, I am inclined to stand on what I think are my rights.

Mr. Haight: All right, then I will ask—

Mr. Blackman: But in so far as raising the question is concerned I will assist you in any reasonable way and we will not—

Mr. Haight: Then I will ask Mr. Saxton to acquire the information as to the distribution of these reports coming from the associated companies to his division, not only their distribution within his department to other divisions, but distribution outside of that and then I will rest with Mr. Saxton.

My division does not keep any record of any securities sold to other than stockholders of A. T. & T. If there is anything of that sort, I should expect it to be in Mr. Uhrig's division.

621 I think we keep a file of the bond circulars but my division does not have anything to do with the keeping of records. Very likely there is a copy of the circular issued by J. P. Morgan & Co. concerning the bond issue of $100,000,000 20-year Sinking Fund 5½% Gold Bonds of November 1, 1923; the same answer as to 35-year Sinking Fund 5% Gold Debentures, $125,000,000 issue of January 1, 1925; and also as to $150,000,000 5% Gold Debentures of February 1, 1930.

My department does not keep any records of the de-
622 velopment and research work classified according to kind of work and the cost thereof. I may receive personally a copy of the expense report of Development & Research as prepared by Mr. Uhrig; nor does my division keep a record of the loans made to Western Electric by A. T. & T. That is

kept by Mr. Uhrig; nor do I have anything to do with the income tax records. I cannot state what division handles that.

As to monthly report No. 2, we receive seven copies, with one additional for December. One goes to Mr. Heiss, one to Mr. Hamilton, Supervisor in my Division; one to Assistant Comptroller Behan; one to Chief Statistician Andrew; one to Vice-President Gherardi; one to Mr. Blair-Smith, Treasurer; one to the official file. The extra copy for December goes to Mr. Brown in the Treasurer's Office.

As to monthly report No. 3, the same number with an additional copy in December are received and the distribution list is the same.

As to monthly report No. 4, we receive eight copies with an additional for December. One to each of the following: Mr. Heiss, Hamilton, Behan, Andrew, Gherardi, McHugh in Mr. Gherardi's department; Mr. French of Mr. Gherardi's department and the additional copy for December to Mr. Brown.

I have a chart which I have prepared before me—Defendants' Exhibit 78, which is offered in evidence; shows the distribution of these various monthly reports coming to my division and is made by my division.

Mr. Cooper, whose name appears on the chart, is operating vice president; Mr. Wlodeck is in Mr. Behan's division; Mr. Uhrig, assistant comptroller; Messrs. Burcher and Harrison both of Mr. Gherardi's department; also the Benefit and Medical Department appears on the chart. Vice-President E. F. Carter among other duties is in charge of personnel work. They are all connected with the A. T. & T. Co. and its departments.

Forms of monthly reports were marked as exhibits as indicated below and offered in evidence, to which plaintiff objected on ground of relevancy, and as unduly encumbering the record:

Monthly Reports.

1—Defendants' Deposition, Exhibit 79.

1A—Defendants' Deposition, Exhibit 80.

2—Balance sheet—Exhibit 81.

3—Income statement for month of .....—Exhibit 82.

4—Telephone operating revenue report for month of .....—Exhibit 83.

5—Telephone operating expense report for month of .....—Exhibit 84.

7—Report of Stations, circuits and central offices for month of .....—Exhibit 85.

21—Plant and general equipment added, removed or abandoned for .... months ending .....—Exhibit 86.

23—Sheets Nos. 1 and 2—Report of Payroll changes for month of .....—Exhibit 87.

22A—Comparison of actual results for .....Exhibit 88.

22B—Sheet 1—Review of provisional estimate as of .....—Exhibit 89.

Sheet 2—Monthly distribution of present view for period ..... to .....—Exhibit 89.

22C—Present view of next year—Exhibit 90.

Analysis No. 10, entitled "Statistics showing the Results of Operations of Telephone Property for ..... ending ....."—Exhibit 91.

Mr. Blackman stated his objection heretofore made was intended to apply to each of the above exhibits separately and to all of them.

Mr. Haight: Yesterday on the record, we made request
628 of Mr. Saxton that he produce the monthly reports of the various associated companies for each of the years 1919 to 1930, both inclusive. I repeat that request and make the request in addition that there be furnished us for the years 1919 to 1922, both inclusive, and from 1923 to 1930, both inclusive, and I also make the request specifically for each of the years 1919 to 1930, both inclusive, and yesterday Mr. Blackman was to say what instructions would be given to the witness in that regard and I would like to know the answer now.

629 Mr. Blackman: The answer is that we will not furnish those reports of the companies other than the Illinois Bell.

Mr. Haight: Then may we have those for the Illinois Bell?

Mr. Blackman: Oh, I do not know; I suppose we could get those in a few minutes but you have had those already, I think.

Mr. Goldstein: What they did was, they said we could find all the Illinois Bell's in the offices of the Illinois Bell but they have not been identified so that we could look specifically over them.

Mr. Blackman: Well, if you want the Illinois Bell reports here for the purpose of convenience, why, we will get them. Do you want the witness to get them right now?

Mr. Haight: No. Then it may be understood that at some convenient time today, or if we are here tomorrow, those will be produced and we will identify them then.

Mr. Blackman: Surely.

Mr. Haight: As to the rest of the request that we have put in three different forms so as to cover the periods, as you have observed, with respect to those, as I understand it, the witness is instructed not to produce them.

630 Mr. Blackman: Yes, the witness will produce those under proper subpoena issued by the court and we will, of course, do all we can to attack and vacate the subpoena because we feel you have no right to those documents.

Mr. Haight: Now, off the record.

(Discussion.)

Mr. Haight: Now, Mr. Saxton, I wish you would tell me, and I have before me to refresh my recollection the form of CR-52. I would like to know, if you can tell me, the net earnings to average plant in service during the year 1923 of the New England Telephone & Telegraph Company as called for in the form first in this question identified.

Mr. Blackman: I object to that as irrelevant and immaterial as the New England Company not being in issue in this case and not bearing on any issue in this case.

Q. 307. Are you able to answer that question, Mr. Saxton? In order to proceed properly, I am first asking you, are you able to answer that question?

A. Not at the moment.

Q. 308. Would you be able, by refreshing your recollection by any documents or paper in your possession or under your control?

A. Yes.

631 Q. 309. And what would such documents or papers be that would so enable you to answer that question?

A. The monthly reports of the New England Company.

Q. 310. Now, I ask for an answer to that question; you may use those documents to refresh your recollection.

Mr. Blackman: The documents are not here and counsel instructs the witness not to refresh his recollection as to them.

Mr. Haight: Do I understand that, as counsel representing

the A. T. & T. Company in this instance and the Illinois Bell Telephone Company, that the witness is instructed not to refresh his recollection to enable him to answer that question?

Mr. Blackman: You understand correctly.

Mr. Haight: Now, may it be understood, Mr. Blackman, that if I repeated the same question and went through the same procedure in regard to all the other information which would appear upon a report for the year 1923, CR-52, in respect to the New England Telephone & Telegraph Company called for in these various columns and if I should follow the same line of questioning in regard to each of the other companies here listed and if we questioned in a similar way in regard to each of the facts set forth on the filled out forms CR-52, CR-53, CR-54, 54A, 67, 67A, 67B, 76, 86, 91, 97 and 53A for each of the years 1919 to 1930, inclusive, that you

632 would in each of those very many, several instances, give the same instructions and produce the same result, that is, that the witness would not be permitted to answer it or use that material?

Mr. Blackman: That is correct, with the single exception of the Illinois Bell. Any information concerning the Illinois Bell is at your disposal, and I might say that in instructing the witness to that effect, I am proceeding on the theory that your question is merely an indirect effort to get the facts in evidence that appear on a written document, the proper procedure being subpoena and the fact that the witness has stated that they would refresh his recollection or knowledge, I think it is obvious is not quite correct. The witness has no information or knowledge of the facts; all he has are the documents; he never knew the facts except as shown by those documents.

I want to make this plain, also, that we are not declining any information concerning the operations of the Long Lines Division, A. T. & T.; so far as that is concerned, if your question was broad enough to cover that, why, we are willing to disclose that.

Mr. Haight: I have put those questions in that way in order to save what obviously would be several days' time and it is in order that we may get the co-operation to save time that we have taken this wholesale method instead of repeating the specific question in each instance and as to each year and as to each—

633 Mr. Blackman: Yes.

Mr. Haight: And as to each fact?

Mr. Blackman: Yes.

The Witness (continuing): The data appearing in CR-52 line entitled "Total Associated Operating Companies" is prepared in our office. As to CR-53, some of the data doubtless appears on Associated Companies reports, some of it on the reports of Mr. Uhrig's division and how that is brought together, I cannot say. As to CR-53A, I cannot say.

As to CR-54, I believe that is all transcribed from the reports of the Associated Operating Companies and the Long Lines; the same answer as to CR-54A.

CR-67 is a summary of the reports of the Associated Companies and is prepared in my division. The same answer as to CR-67A and 67B. As to CR-76, a great deal of the data appearing is transcribed from the reports of the Associ-

635 ated Companies. I am not sure that it is all. The data appearing on CR-86 I think is substantially all prescribed from the Associated Company Reports except for the column headed "Total Associated Companies." CR-91 is all transcribed from the reports of the Associated Companies. CR-97 is data transcribed from other CR Reports.

Mr. Haight: Now, Mr. Saxton, I will ask you to produce in respect to each of these exhibits just identified again, all of the information that was computed in your division of the department.

Mr. Blackman: The same portion.

The Witness: Referring to Defendants' Exhibit 52, which was distribution chart for certain CR reports prepared in my division, there are certain persons named as distributees of certain reports who were not identified by departments—C. P. Cooper, Vice President, A. T. & T., is in the Operating

636 Department, Operation C. Mr. E. V. Cox is under Mr. Cooper as Assistant Vice President. Mr. Gherardi is in the O. & E. Department. E. F. Carter is in the Operation Department, Operation H. G. B. Proud is Assistant Comptroller of Western Electric. W. A. Mason, O. & E., A. T. & T.; Mr. R. F. Wolff is of the same department as Mr. E. S. Wilson, who is Vice President, A. T. & T.

The following CR Report Forms were offered in evidence by defendants and objected to by plaintiff on the ground of irrelevancy, immateriality and incompetency, the exhibit num-

ber corresponding being indicated:

CR-52—"Associated Operating Companies Excluding
637 A. T. & T. Long Lines. Distribution of Total Net Earnings for the Month of ....." Defendants' Deposition, Exhibit 92.

CR-53—American Telephone & Telegraph Company Earnings on Capital Stock—Defendants' Deposition, Exhibit 93.

CR-53A—Bell Telephone System United States—Defendants' Deposition Exhibit 94.

CR-54—Bell Operating Companies—Comparison of Results for .... months this year with same period last year—Defendants' Deposition, Exhibit 95.

CR-54A—Bell Operating Companies—Comparison of Results for .... Months this Year with Same Period Last Year —Defendants' Deposition, Exhibit 96.

CR-67—Associated Operating Companies Comparison of Actual Results with .... View—Defendants' Deposition, Exhibit 97.

CR-67B—Associated Operating Companies (excludes A. T. & T. Co. Long Lines Department) Present View of Next Year (in this instance 1932)—Defendants' Deposition, Exhibit 98.

CR-67A—Associated Operating Companies (excludes A. T. & T. Co. Long Lines Department)—Defendants' Deposition, Exhibit 99.

639 CR-76—Associated Operating Companies Statistical Units for .... Months Ending .....—Defendants' Deposition, Exhibit 100.

CR-86—Associated Operating Companies (excluding A. T. & T. Company's Long Lines Department) Unit Expenses for .... Months ending .....—Defendants' Deposition, Exhibit 101.

CR-91—Results of Operations by States (Annual Basis) Revenues and Expenses per average company stations and percentages—2 sheets—Defendants' Deposition, Exhibit 102.

CR-97—Bell Telephone System in United States, Months Ended.....—Defendants' Deposition, Exhibit 103.

Mr. Blackman: I object to each of the foregoing offers on the ground that each of the papers is incompetent, irrelevant and immaterial on any issue in this case and on the further ground that it is merely an effort to gain information and to obtain comparisons for the purpose of attempting to work up something.

Provisional Estimates from the various Associated Companies, which would include the Illinois Bell, come to my division, but I would have to check to find out to whom else they go in the Comptroller's Department. Outside of the Comptroller's Department, I believe copies go to the O. & E. Department. I am not sure of any further distribution. Data from provisional estimates are used in the preparation of several of the CR Reports. No reports can be said to be compiled from the provisional estimates.

640 CR-67A and 67B I believe are all the CR Reports employing data derived from provisional estimates. Provisional estimates are not used in the compiling of CR-51 and 51A. Provisional estimates are made on forms. My division prepares a consolidated Bell System estimate for the entire system from the provisional estimates and copies of the consolidated estimate are sent to the O. & E. Department and doubtless to other divisions of the Comptroller's organization. I will check up and ascertain to whom these provisional estimates go.

Defendants then requested that plaintiff produce a set of forms and instructions in connection with such forms, in use from 1919 to 1930, both inclusive, with respect to provisional estimates; also the provisional estimates relating to the Illinois Bell Telephone Company for each of those years.

The Witness (continuing): I don't think there are any special letters or instruction or memoranda that go to any of the departments or individuals with CR Reports as indicated on Defendants' Exhibit 52, being the distribution chart for CR Reports in my division.

Defendants request that plaintiff produce for each of
642 the years 1919 to 1930, both inclusive, CR Reports 51B, 55, 55A, 65, 65A, 66, 92 and 94.

By the Witness: I don't know of any reports from Associated Companies showing estimated annual revenue effect of contemplated or pending rate changes, going to any one
643 in the Comptroller's Department. The same answer as to estimated annual revenue value of rate changes.

I located the circulars covering the bond issues I testified about. The circular bearing at the top the legend "$125,000,000 Total Issue A. T. & T. Co. 25 Year Sinking Fund 5% Gold Debentures dated Jan. 1, 1925, due Jan. 1, 1960" marked for identification Defendants' Deposition, Ex-

hibit 104.

The circular bearing the legend "$100,000,000 AT&T Co. 25 Year Sinking Fund 5½% Gold Debenture Bonds, dated Nov. 1, 1923, and due Nov. 1, 1943"—marked for identification Defendants' Deposition, Exhibit 105.

The circular bearing legend at the top "$150,000,000 AT&T Co. 35 Year 5% Gold Debentures dated Feb. 1, 1930, and due Feb. 1, 1965"—marked for identification Defendants' Deposition, Exhibit 106.

I think my division obtained them from J. P. Morgan & Company. I think such of the information as is contained in these documents relative to the Bell System was furnished by my division. Data as to the A. T. & T. Company was probably obtained from Mr. Uhrig's Division.

645 I know that there was distribution of the documents and that a large edition was prepared. The bond issues were to be sold and we were asked to prepare certain information, and I assume that J. P. Morgan & Company used them for that purpose.

Information necessary in the preparation of similar documents for Associated Companies would be obtained from the Associated Companies. We might assist, however, in that instance.

I will see if there is any similar information or documents in the files of my division with reference to the bond issue of the Illinois Bell of 1923—$50,000,000.

Defendants' Deposition, Exhibits 104, 105 and 106, offered and received in evidence.

646 I don't think the Comptroller's Department gets reports from the Associated Companies showing the discounts on bonds sold to bankers, and I don't know that any division receives such reports. The total amount of bond
647 discount and expense is, of course, shown on the Company's regular report. That includes the total to date, not only discount on the issues but the expense in connection therewith. The amount of bond discount and expense appears on the regular reports of the company which are kept in my division. I will check to ascertain whether there is in my division a record of the bond discounts of the various bond issues sold by the Associated Companies of the Bell System from 1919 to 1930, both inclusive. I think Mr. Uhrig's divi-

sion would have the records as to discounts on these three bond issues mentioned in Exhibits 104, 105 and 106.

648 CLYDE UHRIG, recalled:

Further Direct Examination by Mr. Haight.

I have a distribution chart showing the CR Reports prepared in my division and to whom such reports are distributed, which distribution chart is marked Defendants' Deposition Exhibit 107 for identification. The names appearing upon the chart to whom different reports are distributed are as follows:

649 Directors and Executive Committee, A. T. & T—self explanatory.

E. F. Carter, Vice President in charge of Personnel Department.

C. P. Cooper, Vice President.

W. S. Gifford, President.

Official File—Self explanatory.

G. A. Heiss, Comptroller.

B. Hamilton in Mr. Saxton's division.

J. F. Behan, Assistant Comptroller.

H. Blair-Smith, Treasurer.

T. H. Brown, Jr., Treasurer's Office.

C. Uhrig, Assistant Comptroller.

J. W. Green, Auditor.

J. A. Nixon, Assistant Comptroller, Uhrig's Department.

E. V. Cox, Assistant Vice President.

S. L. Andrew, Chief Statistician.

P. W. Saxton, Assistant Comptroller.

650 H. J. Brandt, Benefit & Medical Department.

B. Gherardi, Vice President.

E. S. Wilson, Vice President.

A. A. Marsters, Secretary.

A. H. Ware, Assistant Comptroller, Uhrig's division.

J. L. R. Van Meter, Assistant Vice President.

F. B. Jewett, Vice President.

A. G. Swede, in office of Vice President Gherardi.

J. W. Van Sant, in office of Assistant Comptroller Behan.

W. A. Beckert, same office.

E. J. Clarke, Assistant Treasurer.
C. S. Van Cise, Assistant Treasurer.
A. W. Page, Vice President.
H. J. Foster, in Vice President Cooper's office.
C. M. Bracelen, Vice President and General Counsel.
L. Moll, in office of Treasurer.
R. B. Shaver, Assistant Comptroller.
W. J. Stout, Assistant Treasurer.
C. O. Bickelhaupt, in office of Vice President Cooper.

The executive committee consists of James S. Alexander, George F. Baker, Walter S. Gifford, Philip Stockton, David F. Houston and Daniel Willard. There may be one more. Mr. Alexander was the former president of the National Bank of Commerce in New York. Mr. Baker is Chairman of the First National Bank of New York; Mr. Gifford is President of this company; Mr. Philip Stockton is President of the First National Old Colony Bank of Boston. Mr. Houston is President of Mutual Life Insurance Company of New York. Mr. Willard is President of the B. & O. Railroad.

651 None of the CR Reports prepared in my division are based upon the monthly reports from the Associated Companies identified as follows: MR 1, 2, 3, 4, 5, 6, 7, and CR 22a, 22b, 22c, 23 and the special report that is used for CR Report 91. None of the reports prepared in Mr. Saxton's division form the basis for reports prepared in my division.

In my division there is a record kept of the discounts
652 in respect to the different bond issues referred to by Defendants' Exhibits 104, 105 and 106.

I have here a tabulation which refers to the three bond issues, respectively, which shows total discounts and expenses. Practically 100 per cent are expenses of A. T. &, T. The large factor there is the cost of engraving the bonds.

653 If I can segregate the expenses incurred by Morgan & Company and those incurred by the A. T. & T., I will do so.

The tabulation mentioned is marked Defendants' Deposition, Exhibit 108 for identification.

My division does not receive from Associated Companies a report of estimated annual revenue affected by contemplated or pending rate changes. I don't know whether any such reports are received by my division in my department. My division does not receive anything having to do with estimated

annual revenue values on rate changes from any of the Associated Companies, and I don't know that any other division in my department does receive such reports.

655 JAMES F. BEHAN, for defendants:

Direct Examination by Mr. Haight.

I reside Montclair, New Jersey; I am Assistant Comptroller, A. T. & T., and have been connected with that company since 1912 in the Comptroller's Department. I occupied my present position since middle of 1920. Immediately prior to 1920 I was Chief Accountant; prior to that I was Assistant Chief Accountant; prior to that Senior Accountant; prior to that, Accountant.

I have before me Defendants' Deposition, Exhibit 51, which is an organization chart of the Comptroller's Department, and my division is indicated thereon.

656 The word "Revenue" in my division must be read in connection with the title above and refers to division of methods, revenue accounting methods, and should read "Revenue accounting methods and results." We develop the forms used and methods covering all phases of the revenue accounting work, developing forms, methods of compiling the various kinds of revenue services, such as exchange and toll; forms for controlling the billing against subscribers and for classifying revenues and for furnishing the information necessary for the journal entry to the final accounts on the general books.

The purpose of preparing the forms is to give advice and assistance to the Associated Companies. They are not
657 used to report the results to the A. T. & T. Central Organization. They are used only in the Associated Companies and to some extent in the Long Lines Department. We do not have anything to do with the development of forms for reporting to the central organization.

In connection with our studies of accounting routines, we very often have to make cost studies of present practices in order to compare them with the costs of a new practice under study. That part of the work is done from time to time. We have, of course, some detailed procedure under study all the

time. In some of these studies it is necessary for us to consider the element of cost; in others it is not. We make a cost study on some phase of the accounting work at least once each year.

658 We do not allocate the expense of doing this work to particular Associated Companies in any way. I cannot from looking at our records tell how much the cost of the work done for the Illinois Bell Company was for any of those services. For the Associated Companies we actually make comprehensive audits of the accounts and records of each company and the Long Lines Department annually. The purpose is as a service to the Associated Companies in order to determine that their accounts are correctly kept and that their underlying records substantiate the entries on the general books, that financial position is that stated on their balance sheet and that their income for that year is that stated in their income accounts. That knowledge as to financial condition is not necessarily used by A. T. & T. Company because we receive their monthly reports directly from them and unless in the audit we find a situation different from that reported in the monthly reports, there would be no use for

659 the information we bring in as the result of our audits.

Not to my knowledge are the audits used in determining what advances shall be made to the Associated Companies. They are not relied upon in connection with such dealings except to the extent that the officers are interested in knowing that the accounts of the Associated Companies are correct, as shown by their reports to us.

The item "Field Studies and Accounting Methods and Results," relates to studies we make in the offices of the Associated Companies with respect to the best means of accounting routines, and such studies are made to the end of developing the most efficient and economical way of performing the accounting work, there being a necessity for constantly doing that. The necessity arises through the rapid growth of the business and the great volume of detailed work underlying our accounts. Systems are devised and continuously studied and kept up to date, taking into account the growths to which I have referred.

660 Every increase of the business does not necessarily require some change in our system of accounting or audit. However, we advise as regards changing when condi-

tions justify such advice. I cannot answer as to whether that advice is advice that one would expect the Accounting Department of any institution doing business to need from the outside, but that advice is necessary for accounting in the Bell System, either locally or through a central organization to constantly study the routines underlying the handling of the great volume of business which we have to handle. That would be necessary regardless of reports made to A. T. & T., and the fact that reports are made to the A. T. & T. does not directly have anything to do with it, that I can think of.

661 When new devices come on the market, we consider them, consider their application to accounting work and make studies to see whether it is advisable to install such mechanical devices. If we determine that it is advisable, we make recommendations to the Associated Companies, if our conclusions justify them. We make general recommendations to all. Such recommendations are not necessarily followed. They may or may not be. To a great extent they are. However, I know of no instance where all the Associated Companies have refused to follow recommendations as to the use of mechanical devices in accounting work. We develop the procedure and forms for the companies necessary to be included in the Federal income tax returns. We consolidate the data furnished by the companies to be included in the consolidated returns. All of the clerical processes involved in the

662 preparation of the consolidated returns are done in my division.

We develop the underlying routines of all thrift plans, which includes the employees stock plan. The legend "Employees Stock" embraces employes of the Bell System, and the stock referred to is the stock of the A. T. & T. It includes employes of the Western Electric, E. R. P. I., all of the subsidiaries of the Western Electric, and the Long Lines Department, Fidelity Bonding & Apportionment Methods refers

663 to the handling of all matters relating to a blanket fidelity bond covering all of the employes of the Bell System. We handle all the dealings with the bonding company other than the filing of the claim. There is one blanket fidelity bond to cover all the employes. Every employe from office boy to president of every company in the Bell System is covered. The insured is the American Company and each of the Associated Companies and the Western Electric and certain of its

subsidiaries. Each company pays its pro rata of the premium. It is charged separately to the Associated Companies and the Western Electric and such other companies as may be included. The premium is apportioned on the basis of the
664 number of employes in each company falling within the three classes of employes provided for in the bonding rates; the blanket bond specifies rates for Class A, B and C employes.

In 1918 we commenced preparing consolidated income tax returns for A. T. & T. and Associated Companies in the Bell System. Some of the licensees or Associated Companies during this period have shown a taxable loss. That shows in the returns themselves. The Associated Companies are billed for their share of the income tax payment on the basis as they would pay if they filed their returns individually, except that if any companies controlled by an associate company and included in the consolidated return had a deficit, this deficit would be deducted from the taxable income of the controlling company.

I have computed how much the saving was to A. T. & T. Company by paying on the basis of consolidated income tax and charging on the basis of a separate income tax return to each of the Associated Companies. I have not the computation right here but it can be made available. I have either a pen and ink copy or a typewritten statement in my office.

(Defendants' Deposition Exhibit 78, omitted at this point.)

666 EDGAR S. BLOOM, for defendants:

Direct Examination by Mr. Haight.

I reside at New York City; I am president of Western Electric and have been since August 1, 1926; I am a director in practically all the Western Electric subsidiary companies and am President of the Weco Corporation; I am a director of E. R. P. I., Teletype Corporation, Manufacturers Junction Railway and eight or ten small foreign subsidiaries of Western Electric Company.

667 The Weco Corporation is engaged in holding securities that were formerly owned by Western Electric.

I am a graduate of Engineering Department, University of

Pennsylvania, 1895, and had one year post graduate work. In July of 1896 after I completed my post graduate work, I became connected with Metropolitan T. & T. Co., which was the predecessor of the present New York Telephone Company; was then in the Traffic Engineering Department for about a year; then I was transferred to the Construction Department and became foreman of construction gangs; after about a year I became construction engineer of the company and remained in that position until 1906; then I became Superintendent of Plant of the New York & New Jersey Telephone Company in Brooklyn for about a year and then Superintendent of Plant of the New York & New Jersey Telephone Company in New Jersey. Thereafter, I was General Superintendent of Plant of Pacific T. & T. Co., operating throughout the Pacific Coast;

668 in 1909 I came back east with the A. T. & T. in charge of general supervision of Plant Operation of the Bell System, from the standpoint that the American Company supervised plant operations. Then I was Superintendent of Plant of the New York Telephone Company for the upstate property that they acquired throughout New York State, except the old Metropolitan area here in New York.

I went then to St. Louis in the spring of 1912 as Vice President of the four companies operating throughout the Southwest, that were combined into the Southwestern Bell System, and was there two years; I went to Chicago as Receiver of the Central Union Telephone Company for four years; became President of the Ohio Bell and Indiana Bell; Vice President of Illinois Bell; then I came back to New York in 1922 as Vice President, A. T. & T., and on August 1, 1926, became President of Western Electric.

Also, I am a director of the Bell Laboratories.

669 The Western Electric owns the entire capital stock of the Teletype Company and acquired it I think about October 1, 1930. The Teletype Company manufactures teletypewriters for use in connection with signalling over wires. At the time the Teletypewriter Company was acquired by Western, it had a Development & Research Department of its own and still has it. I don't personally recall how large it is, but it was an organization satisfactory to the size of that corporation and carries on all the development work of the Teletype Corporation.

I had to do with the organization of E. R. P. I., in that I

organized it. At the time it was organized the talking movies were not what they are today but the corporation was
670 organized primarily in the first instance to take out of the Western Electric functions that were not related directly to the Western Electric as a manufacturing company, so that we transferred to E. R. P. I. all outside securities and also transferred to E. R. P. I. the rights under the talking movie patents, but as that business developed and the talking picture business became a large business, we again took the securities out of E. R. P. I. and put them into the Weco Corporation, but at first it was merely for the securities and for the original development of the talking movies.

We had a department in Western Electric at that time and we transferred that organization right over to E. R. P. I.

I am referred to an article which appears in the March, 1930, issue of the Western Electric News entitled "Foresight and Farsight in Purchasing," which quoted words are preceded by the words "Here, Mr. Secretary of Commerce,
671 is the answer of one industry," and immediately beneath are the words "No. 5 of a series inspired by the report of Secretary Hoover's committee on elimination of waste" and beneath that appears the following:

"Foresight and Farsight in Purchasing. At Western Electric a highly trained purchasing staff is the 'lookout' that guides the purchasing for practically the entire telephone industry.

"The basis for all this is the unique relationship between Western Electric—which purchases, manufactures and distributes,—and the Bell System, which utilizes the nation's telephone equipment. This great telephone system computes and transmits to Western Electric a general view of its requirements five years ahead, detailed schedules one year ahead.

"To meet such long time planning this company must make sure in advance of its source of supply. Before any source dries up it must seek another, perhaps at some remote corner of the earth. When a shortage of one material threatens it must find another material every bit as reliable. It also must buy at prices which are fair to the seller, in order that he may remain a reliable source of supply.

672 "This purchasing control correlates material with machinery of production, it avoids excessive inventories, it

is an important factor of economy."

Beneath the above, appear the words "Western Electric, purchasers, manufacturers, distributors, since 1882 for the Bell System," and beneath that the words "This Western Electric advertisement was included in 'The Advertising Parade' published to make a permanent exhibit of the exceptionally good work in the field of 1928."

I think that is a fair statement as of that time.

R. W. Burgess is the chief statistician of Western Electric. I am referred to an article by Mr. Burgess which appears in the May, 1930, issue of Western Electric News, beginning on page 3 and running to page 6 and continued to and concluding on page 56. I am referred to certain extracts from that article as follows:

673 "Many of the outstanding peculiarities of Western Electric methods of operation are natural consequences of its close affiliation with A. T. & T. Company and its associated operating telephone companies. Such affiliations between organizations engaged in different stages of the industrial process is what the economist calls vertical integration. Examples of vertical integration in others fields are:

674 "a. Steel companies which own coal mines, ore lands, boats to carry ore on the lakes, and coke ovens as well as steel mills of various types.

b. Oil producing, refining and marketing combinations.

c. Chain stores which purchase direct from factories or even themselves own factories, in the first case combining the functions of retailer and wholesaler and in the second case, the functions of retailer, wholesaler and manufacturer.

d. Copper mining and refining companies which also own wire drawing plants, brass works and other fabricating units.

"The question as to whether such integration is or is not desirable from the general economic standpoint is illuminated by the experience of the Western Electric Company. As we know from our daily contacts, the identity of the interests of the Western Electric Company with those of our chief customers makes unnecessary much risk-taking and much expenditure of money and energy that inevitably occur when each successive step from raw material to service rendered yields a profit for a different set of stockholders. As a natural result of these savings, Western Electric prices to Bell Tele-

phone Companies are distinctly lower than the prices of other telephone manufacturers to non-Bell telephone companies. Or, putting it another way, the margin between cost of raw material and essential labor and the selling price of the product is relatively small.

"Specific ways in which integration results in real savings are as follows:

"1. Sales effort in the ordinary sense is dispensed with. In a sense, Western Electric products are sold before they are manufactured. Representatives of the telephone companies know that the designs have been worked out by the Bell Laboratories and approved by the general departments of the A. T. & T. Company as the best for the purpose. When material of several designs is produced, the Western Electric representative has no object in urging one over the other and is free to pool his technical knowledge with that of the telephone company's representative.

"2. Continuity in engineering and production schedules is secured by co-operation with the telephone companies. If the preliminary line-up calls for peaks and valleys during the next year or two, arrangements are made with the telephone companies to rearrange the dates of enough projects to smooth out the schedule. As a result, the plant investment required by the Western Electric Company is low in relation to sales volume.

"3. Profit above a fair rate of return on investment is eliminated.

"4. Losses due to production of items which later prove unacceptable to the ultimate consumer are minimized.

676 "5. Opportunities within the system are provided for all types of employes. A man who starts in one company may be transferred to another company or to another department which requires a distinctly different type of personal qualifications.

"In addition to integrating public utility operation and equipment manufacturing the Western Electric Company also exemplifies integration of manufacturing and acting as purchasing agent. An important advantage of this sort of integration as exemplified by the Western Electric Company is that, as purchasing agent, the company can obtain better prices and terms than if it were not known that we may, as an alternative, manufacture ourselves. Our own familiarity,

moreover, with manufacturing processes enables us to discuss more effectively with outside producers what is really a fair price.

"Space does not permit full discussion of the third way in which the Western Electric Company can serve the economist as a specimen, namely, the advantages of research work.

"It is an accepted operating principle of the Bell System and other progressive organizations that every item of equipment and every method is subject to improvement. Research of the engineering type is fairly common in these days.
677 In the Bell System and several other leading concerns, however, this work has been extended to underlying physical, chemical and mathematical problems with a definite realization that it is worth while to conquer the unknown in connection with the broad field in which particular investigations have been made, even though the particular study may not have an immediate dollars and cents value. In the Western Electric Company the spirit of research has also been carried into methods of manufacture, sources and proper prices of raw materials and supplies and all methods of operation."

As to whether I agree with the extracts from the article which I have read, I would not want to answer as to the first part yes or no, unless I first studied steel corporations. I have not studied chain stores nor copper mining companies.
678 I don't know the detail of the integrations of those other companies.

Referring to the portion of the article which reads as follows: "As we know from our daily contacts, the identity of the interests of the Western Electric Company with those of our chief customers makes unnecessary much risk-taking and much expenditure of money and energy that inevitably occur when each successive step from raw material to service rendered yields a profit for a different set of stockholders. As a natural result of these savings, Western Electric prices to Bell Telephone Companies are distinctly lower than the prices of other telephone manufacturers to non-Bell telephone companies," I would answer yes, because that affects certain things that are useless where we have such a close connection and close co-operation, but that doesn't mean, how-
679 ever, that we do not have other risks. We do.

The following statement is correct:

"As a natural result of these savings Western Electric prices to Bell Telephone Companies are distinctly lower than the prices of other telephone manufacturers to non-Bell telephone companies."

Specific ways are then mentioned in the article in which that occurs and with that statement I agree in the ordinary course, because those savings are passed on to the Bell Companies.

As to the portion of the article which reads as follows:

"Sales effort in the ordinary sense is dispensed with. In a sense, Western Electric products are sold before they are manufactured. Representatives of the telephone companies know that the designs have been worked out by the Bell Laboratories and approved by the general departments of the A. T. & T. Company as the best for the purpose. When material of several designs is produced, the Western Electric representative has no object in urging one over the other and is free to pool his technical knowledge with that of the telephone company's representative," I don't know what
680 sense he is referring to, but because of our close relationship, we have a very good idea of what they probably will require, but it is not a firm order until we get their order. That is, we have provisional estimates, but they are not firm orders. We know fairly definitely as to what they estimate the requirements to be for a year ahead and in a very broad way for five years ahead, and then in addition to that, each month each of our distributing houses keeps in close touch with the local telephone company and reports to us any change in plans.

681 The Western Electric in its relation with the Bell System has no selfish interest in promoting the sale of any particular apparatus. We are entirely out of ordinary competition and we do not design something that may have a particular sales appeal. It is developed through the Bell Laboratories and when it is approved and made standard, it is on such a basis that we manufacture it and we do not ever design anything to give it a sales appeal.

The following statement in that article is correct:

"Continuity in engineering and production schedules is secured by cooperation with the telephone companies. If the preliminary line-up calls for peaks and valleys during the next year or two, arrangements are made with the telephone

companies to rearrange the dates of enough projects to smooth out the schedule. As a result, if the preliminary line-up calls for peaks and valleys during the next year
682 or two arrangements are made with the telephone companies to rearrange the dates of enough projects to smooth out the schedule. As a result, the plant investment required by the Western Electric Company is low in relation to sales volume."

With reference to the last mentioned quotation, it is correct with this qualification, it might be that in Denver there are two central offices equipments ordered and they schedule them both at the same time. That would mean that we would be at a peak for those six or seven months and we would ask to put one back a little and one forward a little so that we could keep an average force going continuously for more than six months. That is the theory. If you cut out the peaks and valleys, you have a fair return of investment and a complete working schedule.

The statement is correct that "losses due to production of items which later prove unacceptable to the ultimate consumer are minimized," because everything is approved and standardized before it is put into production.

683 The following statement answers itself:

"Opportunities within the system are provided for all types of employes. A man who starts in one company may be transferred to another company or to another department which requires a distinctly different type of personal qualifications."

With reference to that, I would say that the broader the scope of the work, the more you can transfer people around.

Assuming that the Western Electric manufactures and acts as purchasing agent, the following statement is correct:

"In addition to integrating public utility operation and equipment manufacturing, the Western Electric Company also exemplifies integration of manufacturing and acting as purchasing agent."

I do not agree exactly with the following statement in said article:

"An important advantage of this sort of integration as exemplified by the Western Electric Company is that, as purchasing agent, the company can obtain better prices and terms than if it were not known that we may, as an alternative, man-

ufacture ourselves."

There are two features there, first and last; in this case, in order to get the lower prices, and second, failing to get those prices we can manufacture ourselves.

684 The statement is correct that:

"Our own familiarity, moreover, with manufacturing processes enables us to discuss more effectively with outside producers what is really a fair price."

I am referred to an article by me in the January, 1929, issue of the Western Electric News entitled "The Bell System and Ourselves." "Our president traces the development of the telephone art and indicates a growth for the future." I will read that article and let you know later whether I agree with it as of that date and whether it expresses my views as of the present time.

I am referred to an advertisement in the Western Electric News, September, 1928, as follows:

"Here, Gentlemen, of the Committee, is the Answer
685 of One Industry. A One-Way Street Production Policy.

In telephone making, production schedules move in one direction—forward. The machinery seldom needs to be thrown into reverse.

686 "Cancellations in this industry are rare.

"There is consequently little lost effort involving men, material and machines.

"There is a minimum of waste in scrapping or storing partially fabricated parts.

"How is this possible?

"Because of the close relation between Western Electric as purchasers, manufacturers and distributors and the operating telephone companies of the Bell System served by it.

"Here is another striking economy which contributes to the low cost of your telephone service.

"Western Electric, Purchasers—Manufacturers—Distributors." And the letter "f" in the word "manufacturers" has a line which includes this legend: "Since 1882 for the Bell System."

Allowing for the poetic license of the man that writes an advertisement, that is generally a correct statement.

I am referred to an advertisement in the Western Elec-
687 tric News, May, 1928, as follows:

"Here, Mr. Secretary, is the answer of one industry."

And then the heading, "Planning moves five years ahead."

"Seasonal production with all its economic disturbance persists as an evil in many American industries. But in telephone making it has well-nigh disappeared.

"Western Electric knows substantially what it must produce five years hence because of its close relation to the Bell System. Telephone engineers, skilled in gauging population trends in the growth of telephone service establish the requirements to which Western Electric directs existing production facilities and provides for additional facilities when and where needed.

"What follows is a production curve relatively free of peaks and valleys. Inventories are kept at a minimum, machinery is busy, employemnt is stabilized, plant investment is accurately related to production needs, wages have progressively risen relative to the cost of living while prices have been substantially reduced.

"Thus does Western Electric by balancing production with demand, eliminate waste in the great industry of telephone making.

688 "'Western Electric.

"Purchasers—Manufacturers—Distributors."

And relating to the "Manufacturers," the words "since 1882 for the Bell System."

The statement in the above was correct as of that time and it was based upon 30 years' past experience, but we are in the world's greatest depression and it does not certainly apply to the situation today. It could not.

I cannot say, but Mr. Stoll is familiar with the details as to whether the D. & R. Department of Teletype Corporation is larger or smaller than it was when the concern was taken over by Western Electric. None of the D. & R. work of Teletype, however, has been done by A. T. & T. I am familiar with the work done in the Department of D. & R., A. T. & T. and the work done in the D. & R. Department of the Teletype Corporation is of the same general nature. It has to do with the fundamental development of Teletype, but it has entirely different activities.

ARTHUR W. PAGE, for defendants:

690 *Direct Examination by Mr. Haight.*

I reside at Long Island; I am vice-president, A. T. & T. and have been since January 1, 1927. I was not connected with the company before that. Prior to that time I was a partner in the publishing firm of Doubleday, Page & Company, ever since I left college. My department in A. T. & T. is the Information Department. That department does the advertising and publicity for the Bell System, which is of a common nature for all of its parts. We consult with the operating companies about their public relations.

691 Defendants' Deposition Exhibit 109 is a photostat of the organization chart of my department. I am a director in the Southern Bell Telephone Company and am president of the Bell Securities Company and am on the committee of the Long Lines.

The Bell System Technical Journal is a publication issued regularly by A. T. & T. Likewise the Telephone Almanac and General Information. The Headquarters Bulletin is

692 an official publication of the company. So, also, is the Bell Telephone Quarterly. All the publications listed on this chart were gotten out by our department, but they are not necessarily all regular official publications in the sense that that term is used in the publishing business. They are not all issued at stated times and they are not all necessarily entered as second class mail.

We advertise in order to promote the good will and sales of telephones and the Bell System. We place advertising in national magazines for the Bell System and those maga-

694 zines circulate in the territory of each of the companies. It is advertising which applies to each particular company in its own particular area. The advertising, however, does not state the name of any particular associated company.

We make no allocation of expenses as between the various associated companies. We have, however, two allocations. Long Lines pays for its own advertising and Bell Telephone Securities Company pays for all of its advertising. Otherwise we pay for the rest of our operations.

Long Lines advertising relates to long distance telephone

service, whether it be carried on the lines of the Long Lines or associated companies. I place that advertising. I place
695 the advertising for the Bell Telephone Securities Company, which relates generally to the securities of the A. T. & T. and some securities of the associated companies such as bonds.

I have been consulted during the last year in respect to allocation as between the associated companies and A. T. & T. of expenses of Information Department. I talked to Mr. Heiss about it two or three months or more than that ago. I made an allocation on the estimate of the time that I spent on the things that could be possibly attached to the A. T. & T. I have not an estimate here. I made an oral estimate to Mr. Heiss.
696 I made some memo about it. I haven't it. You will have to ask Mr. Heiss about it. I gave it to him. I haven't any copy of it. Mr. Banning and Mr. Cook helped me prepare it. I think was signed by me. I put down on that memo the advertising that we did for Long Lines and the Securities Company. I allocated other expenses of the Information Department in addition to advertising to the Associated Companies, the A. T. & T. or the Bell Telephone Securities Company. I allocated the two pieces of advertisement I told
697 you, outside of their particular purpose.

There were some minor costs. I think I allocated something for a half dozen or more publicity statements of finances of the American Company that we get out—quarterly statements for the company. I allocated that all to A. T. & T. I allocated to the Associated Companies expenses relating to finances, only such financial pamphlets as the Associated Companies asked for. That was to the Associated Companies as a whole.

The Headquarters Bulletin is charged in proportion as the people to whom it goes serve the Associated Companies or the A. T. & T. A separate charge was not made against
698 each of the Associated Companies on that, a lump charge against all and allocated as between them on the one hand and the A. T. & T. on the other.

The Bell Telephone Quarterly was allocated to the Associated Companies. Bell Technical Journal the same. Telephone Press Service the same way. It only goes to the Associated Companies, Telephone Almanac the same way as that, only goes to the Associated Companies.

Except for the Headquarters Bulletin, none of these publications were in any wise charged to any entity in the Bell System other than the Associated Companies. None of these publications go to investors or to financial houses or to brokers. The Almanac goes to the Associated Companies who
699 distribute it as they see fit. Some of these publications may go to people of the Western Electric who get the Technical Journal—their engineers. Associated Companies supply us with a list and we send them to the individuals in their company. The Technical Journal has about 2,000 paid subscribers and it is also sent to the telephone engineers and scientists abroad, who obtain scientific knowledge from it and from whom we hope to get corresponding knowledge in return.

The Bell Quarterly goes to people in the Bell Telephone Laboratory and the Western Electric designated by said organizations.

In each of the Associated Companies there is a Public Relations Department, not always under that title but of that general character, and it is usually headed by a vice-president and it is his function to endeavor to see that the operations of the company are not only technically well carried on but in a manner pleasing to the public which it serves. Our relationship to those departments is as counsel to help do that and in doing so we have the usual annual conferences and also people from our department travel about from time to time and keep in touch with them constantly by telephone, etc. The expense of doing that work is allocated generally to the Associated Companies. But it is not allocated in the regular course of business. The allocation I refer to was in the memo to the operating companies as a whole.

No charge is made for the Bell Telephone Quarterly to any particular company on account of the list furnished by that company. The Bell Telephone Securities Company issues
701 publications. I have in mind the Bell Telephone Securities. That goes to bankers, brokers and stockholders who ask for them,—to whoever asks for them, such as prospective investors. It is not done, however, very extensively.

Defendants' Deposition Exhibit 110 for identification is from Bell Telephone Securities, dated April 15, 1931, the title page and prefatory note of which appears on page 3, and the article entitled "Organization and Financing of the Bell Sys-

tem," beginning upon page 6, terminating on page 26 and the titles, charts, maps, graphs appearing opposite several of the pages; also including the map opposite page 7,
702 entitled "Toll Lines of the Bell System, Inc., in One Comprehensive System of Communication."

Defendants' Deposition Exhibit 111 for identification is from a Bell Telephone Securities Company issue dated April 15, 1930, and includes the chart appearing on page 14, table of statistics upon pages 19 and 20 and the subject matter and table of statistics and all matter appearing upon pages 25 to 28, both inclusive.

Defendants' Deposition Exhibit 112 for identification is from the Bell Telephone Securities Issue dated April 15, 1929, and includes two charts appearing upon page 10 and the subject matter appearing upon pages 25, 27, 28 and 29.

Defendants' Deposition Exhibit 113 for identification is from Bell Telephone Securities Issue dated April 15, 1928, and includes pages 17 to 23, both inclusive, and pages 25 to 29, both inclusive.

Defendants' Deposition Exhibit 114 for identification is from Bell Telephone Securities Issue dated April 15, 1927, and includes subject matter appearing on pages 5 to 27, both inclusive.

704 Defendants' Deposition Exhibit 115 for identification is from Bell Telephone Securities Issue dated May 1, 1926, and includes two charts upon page 8, one upon page 10, another upon page 11 and subject matter beginning on page 13 with the heading "Finances of the System," to and including page 16, and the charts and graphs therein appearing, and also pages 20 to 27, both inclusive, and pages 29 to 31, both inclusive.

Defendants' Deposition Exhibit 116 for identification is from the Bell Telephone Securities, issue dated April 1, 1925, and includes page 5, pages 20 to 27, both inclusive, and pages 29 to 31, both inclusive.

Defendants' Deposition Exhibit 117 is from Bell Telephone Securities, issue dated May 1, 1924, and includes the chart being on page 20 and all the material appearing upon pages 29 to 31, both inclusive.

705 Defendants' Deposition Exhibit 118 for identification is from Bell Telephone Securities, issue dated May 1, 1923, and includes all material appearing upon pages 5 to 22,

both inclusive, and upon pages 24, 26 and 27.

Defendants' Deposition 119 for identification is from Bell Telephone Securities, issue dated May 1, 1922, and includes pages 16 to 21, both inclusive, and also matter on page 23.

(In connection with each of the foregoing exhibits for identification, 110 to 119, both inclusive, the title page of each is included as part of the exhibit.)

Defendants' Deposition 120 for identification is a pamphlet entitled "Some Financial Facts About Bell System comprising American Tel. & Tel. and Associated Companies," etc.

Defendants' Deposition Exhibit 121 for identification is
706 pamphlet entitled "Others' Opinions Concerning the Investment Merits of the American Tel. & Tel. Stock," etc.

The Witness (continuing): Defendants' Exhibit 120 for identification was issued in March, 1931, by the Bell Telephone Securities Company. I have seen Defendants' Exhibit 121 for identification, but that was published before I came with the company. I think it has been distributed since I came with the company, but not very much. The other one, Exhibit 120, has been distributed continuously.

707 I had nothing to do with any of the exhibits except to read them as they come in. They come to me after they are prepared for my approval of their issuance, but I do not myself prepare the work on the figures.

Referring to Exhibits 120 and 121, I would say that they would be prepared by the proper people of the Bell Securities Company who are also part of the treasurer's organization A. T. & T. I do not prepare the material contained in the Bell Securities publications.

708 Mr. Thompson: Counsel for the defendants have submitted 11 requests with respect to the production of contracts, agreements and other written instruments from the files of the Western Electric Company.

With respect to No. 1, an agreement between the International Western Electric or International Standard Electric and the Western Electric Company, December 30, 1926, we have been unable to find any such agreement.

There is an agreement as of that date between E. R. P. I. and the Western Electric Company, a copy of which was produced by Mr. Otterson and offered in evidence by the defendants during the course of his testimony.

Request No. 2: We now produce an agreement between Western Electric and the International Telephone & Telegraph Corporation and the International Western Electric Company, Inc., dated August 14, 1925;

Also, an agreement between the Western Electric Company, Inc., and the International Western Electric Company, Inc., dated October 1, 1925.

709 Also an agreement between Western Electric and the International Standard Electric Corporation dated March 30, 1928;

With respect to Request No. 3: We produce an agreement between the International Telephone Sales and Engineering Corporation and the Western Electric Company, Inc., dated May 24, 1927. It is my understanding that this contract was assigned by the International Sales and Engineering Corporation on October 13, 1927, to the Automatic Electric Company. I did not understand that your request was broad enough to require the production of the assignment. However, if it is desired, I will produce it.

With respect to Request No. 4: We produce an agreement between the International Western Electric Company, Inc., and the Northern Electric Company, Ltd., dated January 1, 1919;

Also an agreement dated August 27, 1919, between the International Western Electric Company and the Western Electric Company, Ltd.;

Also an agreement dated May 16, 1923, between the American Telephone & Telegraph Company, the Western Electric Company, Inc., the International Western Electric Company, Inc., the Northern Electric Company, Ltd., and the Bell Telephone Company of Canada, Ltd. It is my understand-
710 ing that this has been assigned to the Western Electric Company as of September 30, 1925, the date when the Western disposed of its holdings in the International Western Electric Company.

Mr. Goldstein: May we have that assignment?

Mr. Thompson: I see no reason why we won't produce the assignment, although I do not understand that it was covered by the scope of your request.

With respect to Request No. 5: We produce agreement dated October 11, 1928, between the Western Electric Com-

pany, Inc., and Graybar Electric Company, Inc.

With respect to Request No. 6: We produce an agreement between the Western Electric Company, Inc., and Stromberg Carlson Telephone Manufacturing Company dated August 13, 1923.

With respect to Request No. 7: We produce an agreement between the Western Electric Company, Inc., and the International Telephone Sales & Engineering Corporation dated March 21, 1924.

With respect to Request No. 8: We produce first, an agreement between the Western Electric Company and the International Telephone Sales & Engineering Corporation, dated March 26, 1931, but inasmuch as this agreement refers to an earlier agreement and perhaps incorporates a part of its terms, we have also produced the earlier agreement be-
711 tween the two companies dated June 19, 1919.

With respect to Requests Nos. 9 and 11, referring to agreements between the Western Electric Company and Kellogg Switchboard & Supply Company and Stromberg Carlson Telephone Manufacturing Company, covering basis of prices, we will have that information within a day or two and we will give it to you.

With respect to Request No. 10: We produce the following agreements between the Western Electric Company and the Kellogg Switchboard & Supply Company covering licenses and patent grants between the two companies covering the period between 1914 and 1930, both inclusive.

With respect to these agreements, I want to state for the record that so far as we have been able to discover, these are all the agreements we have, but the period inquired about is rather an extensive one, and I am not going to state on the record that there may not be other agreements which we may not have. These agreements are as follows:

One dated June 2, 1914;
One dated August 3, 1923;
One dated September 22, 1923;
One dated November 16, 1923;
One dated January 26, 1927,
And one dated February 9, 1927.

712 At the time Mr. J. E. Otterson was on the stand three requests were made of him to produce contracts and

form of organization chart. I now produce in respect of Request No. 2, made of Mr. Otterson, an organization chart of E. R. P. I. which has been prepared in accordance with the agreement made with counsel for the defendants, so as to bring it down to date. It is in typewritten but not in printed form.

I also produce a form of contract between E. R. P. I. and Exhibitors of Motion Pictures;

Also a blank form of contract between E. R. P. I. and Recording Licensees;

Mr. Blackman: I have looked through this memorandum and there is only one thing on it that I think I will not furnish and that is the minutes of the meetings of the Board of Directors, A. T. & T. and the minutes of meetings of Executive Committee, A. T. & T. Those are Nos. 3 and 4 on page 7 of your memorandum, Mr. Adcock.

All the other things, I do not think there is any doubt about our furnishing. As you know, Mr. Bracelen has been ill for the past two days and I want to speak to him, because he has general control of the matter, but so far as I am concerned, I think we will agree that all the others will be furnished.

713 Mr. Blackman: I may say as to objections to materiality and relevancy, if there is any objection, they will be properly made, but no objection will be taken on the ground that they are not copies of reports put out by the company which purported to put them out. In other words, you will not have to prove that they were published in any particular journal or that that journal was published by the A. T. & T. or the Western Electric, as the case might be. There is one other thing I see here that I shall advise be not submitted. You are asking for all the publications of the Long Lines Division. I shall advise that that be not furnished.

716 EDGAR S. BLOOM, recalled:

I have read an article appearing in the Western Electric News, issue of January 1929, at page 326, about which article I was asked when I was on the stand before. This article correctly presents my views.

737 PIERRE W. SAXTON, recalled:

Direct Examination by Mr. Haight.

CR. 56, 58, 59, 73, 74, 75, 77, 78, 79, 80, 81, 82, 83, 84 and 85 have not been used. In 1923 there was a CR 68 which was entitled "Cash Estimate." In 1923 to 1926, inclusive, there was a CR-69 entitled "Advances, Bills Payable and Coupon Notes." In 1923 and 1924 there was a CR-70 entitled "Plant Purchased or Sold." In 1926 to 1930 there was a CR-93 entitled "Revenue Accounting Expense Report."

Provisional estimates of the Associated Companies are distributed, one copy to the official file, one to President Gifford, one to Mr. Heiss, one to Mr. Saxton, one to Mr. Behan,
Uhrig, Andrew, Hamilton, Gherardi, Waterson, Wlo-
738 deck; five to Mr. Wilkinson, O. & E. Department, who is under Mr. Gherardi. Mr. Waterson is in Gherardi's organization.

I have forms of provisional estimates used by Illinois Bell for years 1919 to 1930, both inclusive. The instructions are
contained in the forms themselves and appear as gen-
739 eral notes on the back of the first page, and there are certain sheets in the estimate entitled "Explanation of Statements." I am referring to the form for 1919. I have not looked through all the forms.

I believe there is a letter of transmittal sent by the President of the company. The forms are transmitted to the presidents of the Associated Companies. I never heard of that letter referred to as the letter of instructions. Those letters are not sent out by our department. I think they are sent by the president, Mr. Gifford, and that letter is referred to as the letter of transmittal. There may be letters of instruction that come from various departments, or various staffs, referring to the manner in which these provisional estimates are to be made out, but I don't know. If there have been such letters, they have probably been sent by the department of O. & E.

740 The forms of provisional estimates produced were offered in evidence and marked Defendants' Deposition Exhibits as indicated below:

For the year 1919—Defendants' Deposition Exhibit 122.
For the year 1920—Defendants' Deposition Exhibit 123.
For the year 1921—Defendants' Deposition Exhibit 124.
For the year 1922—Defendants' Deposition Exhibit 125.
For the year 1923—Defendants' Deposition Exhibit 126.
For the year 1924—Defendants' Deposition Exhibit 127.
For the year 1925—Defendants' Deposition Exhibit 128.
For the year 1926—Defendants' Deposition Exhibit 129.
For the year 1927—Defendants' Deposition Exhibit 130.
For the year 1928—Defendants' Deposition Exhibit 131.
For the year 1929—Defendants' Deposition Exhibit 132.
For the year 1930—Defendants' Deposition Exhibit 133.

The Witness (continuing): In connection with my pre-
741 vious testimony I said that we prepared a combined provisional estimate for the Bell System including Associated Companies and Long Lines in general. As a matter of fact, the combined provisional estimate is for the Associated Companies only. The distribution of the combined provisional estimate is as follows:

742 One copy to the official file, one copy to Mr. Gifford, Cooper, Heiss, Saxton, Behan, Uhrig, Andrew, Hamilton, Cogan (he is in my organization), Gherardi, Waterson and Harrison (he may not have been identified—is in O. & E. Department); one to Mr. Anthony (also in O. & E. Department), Burcher (O. & E. Department); one to French (O. & E. Department); one to Crunden, assistant comptroller American Company; one to Wlodeck, Wilkinson and one to Mr. McHugh of O. & E. Department.

There is a form of combined estimate for the Associated Companies, which is a summary, which I have just referred to as distributed. That form has no number but it is simply a combination on the same form as are used by the companies.

Defendants request plaintiff to produce the combined provisional estimates for all the Associated Companies for each of the years 1919 to 1930, both inclusive, which request was taken under advisement.

743 *Cross-Examination by Mr. Blackman.*

I know practically nothing personally of the operations of the New England Telephone Company. The reports of the company are kept in my department and aside from the reports that are sent periodically by that company to my division, I don't know anything about its income and invested capital and matters of that kind

744 *Redirect Examination by Mr. Haight.*

Those reports referred to, come to my division in the regular course of business and upon regular forms provided for that purpose. They are used by us for preparation of our own reports, such reports as I have already testified are made.

Mr. Blackman: Mr. Haight, in order to make this clear and to avoid any unnecessary further examination, I am not casting any reflection on the authenticity of the reports at all. My point is simply directed to this and I will make it plain on the record so that you will understand. In answer to a question by you the witness said he could refresh his recollection or refresh his knowledge of the income of the New England Company by examining the reports. I am making the point that he cannot refresh his recollection or knowledge because he never had any, that all he can do is to tell you figures that show on paper that is in his department.

Mr. Haight: All right.

745 JAMES F. BEHAN, recalled:

Direct Examination by Mr. Haight (Continued).

Defendants' Exhibit 134 for identification is a tabulation showing the benefits to A. T. & T. resulting from consolidated income tax returns. At the bottom of the sheet is a statement "Notes, 1. Companies having deficits failing to pay dividends to the American Company." In 1918 there were companies who had deficits and did not pay dividends. The

fact that no dividend was paid to the American Company is not taken into account in arriving at the figure of $196,-
746 286.17, which purports to represent the net amount of benefit to the American Company for the year 1918. The amounts shown on the sheet represent the savings to A. T. & T. without taking into account any loss to it as a result of the failure to receive interest or dividends from those companies. A distinction is drawn between the years 1918-23 and between the period 1923-30 inclusive, because our returns for the period 1918-23 are closed with the Department at Washington, final settlement having been made. All of the other years are still open and still subject to discussion, so we don't know the final amount of taxes for those years.

In connection with the settlement for the years 1918 to 1923, we made additional payments over what had been paid originally, based on the return as filed.

747 Plaintiff's counsel refuses the request of defendants that witness produce the figures showing the additional payments for each of the years 1918 to 1923).

The additional payments were based upon the additional assessment for the consolidated group and the additional assessment, of course, could be allocated to the companies. We have made such an allocation to the various companies.

(Witness states that he will furnish subject to direction of counsel, statements showing such allocations.)

Each company that was involved in the additional as-
748 sessment was billed for these additional payments. Some of them may not have been involved. As to whether the additional payments made by each of the companies in connection with their respective returns is reflected in the statement contained in Exhibit 134 for identification, I will say that the statement does not purport to reflect payments to the extent of the additional payments. It affects the final return.

The figure $196,286.17 for the year 1918, appearing upon the said exhibit, was determined by taking the final figure after audit by the Internal revenue department. To compute said figure, we took the final amount of tax which the A. T. & T. would have paid on an individual basis and deducted from that the amount of tax which it actually paid on a consolidated basis, and the difference is the benefit to A. T. & T.

from the consolidattion. We do not figure in such computation on any or all of the companies whose income we use in the consolidated income tax return, what each of the companies would have paid on an individual basis and what each of the companies was billed and paid on a consolidated basis. All we figure was the difference between what the American Company would have paid and what it did pay.

Defendants' Deposition Exhibit 134 for identification was offered and received in evidence as Defendants' Deposition Exhibit 134.

750 CLYDE UHRIG, recalled:

Direct Examination by Mr. Haight.

With reference to bond discount and expense on the three issues I have mentioned in my original testimony, I was asked to make certain segregations, which I have done, and they appear upon Defendants' Exhibit for identification 135, entitled "American Telephone & Telegraph Company," etc.

751 I have here, in connection with CR-14, a document consisting of two sheets entitled "Cash Statement for years 1918 and 1919" which is marked Defendants' Deposition Exhibit 136.

I have the same CR-14 Report for the years 1920 and 1921 (2 sheets) which is marked Defendants' Exhibit 137.

I have also produced CR-18, consisting of a plurality of sheets covering the years 1919 to 1930, both inclusive, which is marked Defendants' Exhibit 138; also CR-10 for the years 1919 to 1930, both inclusive, which is marked Defendants' Deposition Exhibit 139.

(Said Exhibits 136-139, inclusive, were offered in evidence by defendants.)

The figures shown on CR-16 which I have produced, entitled "Final Cash Estimate December, 1919"—"Balance Nov. 30, 1919—$70,039,000" were estimated receipts for the month of December, 1919. I have no compilation or statement showing the estimated receipts by the classes shown on CR-16 for the entire year 1919. I probably have no compila-

tion, corresponding to these classifications.

753 I think we have a statement which shows the estimated receipts and the estimated disbursements for each of the years 1919 to 1930, but the subdivisions would not necessarily conform to those on CR-16. I would not say, however, we have estimated receipts and estimated disbursements by some classification for those years. An estimate undoubtedly was made, but whether it was preserved or not, I don't know. Doubtless we have sheets corresponding to CR-16 for each of the months for the years 1919 to 1930.

(Defendants' request that witness produce for each of the years mentioned, in the alternative, either a statement showing the estimated receipts and estimated disbursements by subdivisions, or produce the monthly reports CR-16 for each of the months of each of said years, was taken under advisement by plaintiff.)

CR-13 is a report compiled in my department, which report is the Allotment Report.

(Request to produce Report CR-13 for each of the years 1919 to 1930, inclusive, taken under advisement.)

Mr. Blackman asked whether that was a report already furnished to defendants. Mr. Goldstein stated it had been furnished for inspection only and no copies could be made every time he got part of the information in Chicago.

The Witness (continuing): Defendants' Deposition Exhibit 140 received in evidence is a chart showing certain CR Reports that had once been in use and were no longer in use.

755 SEYMOUR L. ANDREW, for defendants:

Direct Examination by Mr. Haight.

I reside at South Orange, New Jersey; I am chief statistician, A. T. & T. and I was thoroughly educated at Harvard College. I have been in charge of my division since 1921. My division furnishes advice and assistance in the development and prosecution of the statistical work of the accounting departments of the associated companies and of work related to that statistical work.

The words "Methods of Statistical Analysis and Presenta-

tion" appearing upon the organization chart of my de-
756 partment—Defendants' Deposition Exhibit 51, refers to methods and we endeavor to assist the associated companies in the development of methods whereby the data in the underlying records may be most clearly, quickly and concisely made usable for administrative purposes of the Associated Companies. That work has nothing to do with the administrative purposes of the Bell System as a whole or the work of A. T. & T. except in so far as the methods may also be allocable to the work of the other departments of the general staff and are used by them.

The words "Statistical Methods of administrative control" relate to the administrative control exercised by all supervisors of the associated companies. It is not designed for the purpose of the organization of A. T. & T., and does not relate at all to the administrative control exercised by A. T. & T.

As an instance of statistical methods of administrative control we have developed "Development of a job control book." That is, we suggest to the associated companies the form whereby statistical data may most readily be kept for day-to-day use by a supervisor in those companies. The development of the job control book is a continuing piece of work. I have forgotten when the start was made on that, but of course the need for statistical control methods and devices has become greater as the size of the system has become greater.

Job control means the control of the functions under
757 the immediate direction of the supervisor, the object being, of course, so that every supervisor can have the statistical information relating to his job in the easiest and best form.

758 On the control charts, Defendants' Deposition Exhibit 51, there appear the words "Mathematical Statistics," which relates to assistance rendered to the associated companies involving problems regarding the use of so-called higher mathematics. Such problems are not to any appreciable extent before me in connection with work of A. T. & T. as such, but we are asked occasionally by other members of the general staff for advice on problems involving higher mathematics. The work is not of a character where results can be sent. If there are problems that come up the general procedure would be to have the associated companies send some

one in to discuss them. No reports are made as a result of such discussion. The general staff ask for information of the same sort on which we consult and give advice only as I have already said.

I am not, however, immensely familiar with other departments requiring mathematics. A number of them, of course, have their own mathematicians.

759 I cannot state how many representatives of Illinois Bell have come to my division for advice in relation to mathematical statistics since I have been in charge. We do not keep a record of that. I have no recollection offhand, but I might say that mathematical statistics is a very small fraction of our division.

In regard to which one of the topics appearing under my name, "Chief Statistician," on Defendants' Exhibit 51 represents the largest part of my division work, I would say that the real classification of the functions of the division does not closely tie up with the particular language used in this chart. For example, the main function of the division is with reference to the development of statistical methods. Work of that character is carried on by each of the sections shown in these charts. Those methods do not relate to the making out of reports that go to the Associated Companies, but they relate to methods of summarizing, analyzing and presenting the underlying data of the associated companies for their own use. It does not include anything that relates to the making out of reports of those results to A. T. & T. I pre-
760 sume, however, that underlying data used in the making out of reports by associated companies to A. T. & T. is in some wise used. It, however, has nothing to do with the provision of the original data. It relates to methods of analyses and presentation of the data after it has been originally compiled. So far as I know, portions of it are presented in monthly reports to the A. T. & T.

Under the heading "Pension and Depreciation Studies" on Exhibit 51, we compute each year for each of the associated companies the proper accrual expense which they should charge to meet the undertaking to provide pensions in accordance with the terms of the pension plan of the Associated Companies. It relates to Long Lines but not to Western Electric or E. R. P. I. My division has nothing to do by

way of cooperating or giving advice relating to pension
761 funds to Western Electric. Nothing of a formal character.
They provide their own accruals and compute them. I should not be surprised, however, if the people engaged in that work talked with our people from time to time.

Mr. R. W. Burgess, chief statistician of that company, worked out the Western Electric method. Our method was worked out in my division. I think both methods were worked out simultaneously. There was presumably cooperation of the character I have stated.

"Depreciation Studies" relates to the study of of those aspects of proper depreciation procedure which involves the use of mathematics. In the determination of service life
762 of various classes of property the use of mathematical formulae and mathematical procedures are involved.

We have advised Associated Companies in respect to their use and appropriateness. In so far as the form conceived by my division is applicable, they all use it. The form is applicable to those classes of telephone property for which experience as to service life is available. I don't know when that was started, but it was before 1929. I cannot tell when I recommended the use of formulas based upon experience. I cannot say as to whether it was after my original connection with my division. Of course our work in connection with recommending formulas upon the service life for the various associated companies is in the nature of research work. The recommendations go out by other people than ourselves.
763 As to the persons to whom recommendatinos go, we work with the proper people in the department of O. & E. as well as with the comptroller. We give them advice with respect to the mathematical processes involved. For example, studies were made in our division as to the type or types of mathematical formulae which might best fit the mortality experience of certain types of plant. Our conclusions as a result of those experiments and research along that line were forwarded to Department O. & E. and to the comptroller. That happened some years ago, I do not recall the exact date, but I will find out the date and let you know. That advice and the studies were based upon the experience of more than one of the associated companies, but I cannot say with exactitude as to the number.

764 At first hand I cannot say whether the formula based on service life that I have referred to, is now used by the Illinois Bell. As to the particular name by which the formula is designated, it seems to me that I have heard the name Gompertz-Makeham in connection with it. My impression is my division had nothing to do with the formulation of that law or formula, but in connection with that formula we undertook studies to determine whether or not it was applicable in the case of the mortality experience of classes of telephone property.

As to whether my division did work in computing the mortality of this property in the service on the basis of this formula, I will say that we were not after results. We were after methods of obtaining results.

As to whether we did anything else in connection with service life from the time I entered the division except what I have stated, I will say that I believe that members of the
765 division have advised in respect of methods for determining service life where a formula of this character would not apply. That is in those classes of property where this formula would not apply. I presume advice was given with respect to such classes of property. I do not remember what it was.

I cannot answer the question as to whether we made any studies or gave any advice in regard to the element of salvage relative to the subject of depreciation.

I do not think we used monthly reports of the associated companies in connection with any of these studies or recommendations that I made, but we did receive data as to the associated companies' past experience with respect to certain classes of property upon which those studies were based. The reports used were in terms of physical units. I don't think we used any monthly reports of the associated companies that have been referred to as numbers 1 to 7, both inclusive, and number 28 or 22a, 22b, 22c, but I will check that and be certain. We do use in some of our work some of the C. R.
766 reports in general relating to the associated companies and not reports relating to A. T. & T. We make use of the monthly reports of the associated companies for things other than depreciation.

In connection with our methods of work, we use monthly reports MR-1 to 7, both inclusive, MR-23, 22b, 22c and the spe-

cial report on which CR-91 is based, but I do not think that advice and recommendations to the Illinois Bell and to O. & E. Department and to the other associated companies is based upon the above mentioned reports or upon studies based upon said reports. The reports enter into our work by keeping us advised as to the size and condition of each of the asso-
768 ciated companies, which has a bearing upon the method which we may suggest to them as to the bearing. I will say that the methods which we might suggest for consideration in a small company would probably be somewhat different in detail from the methods suggested for use in a large company. In the way in which I have said, when we make determinations and give advice based upon studies, where that advice relates to the large companies we use the information from these various reports relating to such large companies. That is, the use that we make of them is not related to the advice that we give in respect to methods; in other words, to make that clear, we do prepare for certain officials and other members of the general staff of this department, some graphical presentations in which the data from those reports is used. In the way that I have already stated, we do use in giving the advice the facts stated in the report from the associated companies relating to their affairs and the advice has some relation to the facts stated in the reports.

770 We use them in preparation and maintenance of certain graphic reports sent to other members of the general staff, the graphic reports going to Mr. Gifford, Cooper, Gherardi, Heiss and one or two of the members of Gherardi's organization. I presume my division gives advice or recommendations that are divisions of methods of what has gone before. In the same way and to the same extent as I have explained, those recommendations based on the same reports have the same relationship to the reports as I have already stated.

I don't know whether we use CR-52 entitled "Associated Operating Companies, including A. T. & T., Long Lines Distribution of Total Net Earnings for Month of ....." I don't think we use CR-53A nor CR-54. As to CR-54A, I cannot be absolutely sure nor as to 67A. The only use, however, which we would make of any or all of such reports would be in connection with the making or posting of a few charts

maintained for the other members of the staff, but I
771 cannot say what if any use is made for that purpose.

My division has 115 employes. It does not have anything to do with the study of fundamental plans. We receive, however, copies of provisional estimates. We do not have anything to do with their preparation.

I think the heading on chart, Defendants' Deposition Exhibit 51, relating to the Comptroller's Department, relating to five-year budgets, is largely a misnomer. It was put there primarily for the purpose of having something over the name of the fellow that appears under each. We are in a little difficulty once in a while in showing coordinate members of the organization and then devising some title to apply
772 to them. Of course in the field of general statistical methods is involved methods of estimating, and it is in connection with that, that that term is used.

Also on Defendants' Deposition Exhibit 51, there appears the heading "Economic Statistics" and under Mr. Belcher is "Financial Studies," which title appears above the name of Mr. Hodgkinson, Jr. That entire group is concerned with the study of current business conditions in the economic world outside of the telephone company. There again we have a case of two coordinate individuals in that group and we call one of them "General Economic Studies" and the other "Financial Studies."

773 In connection with those we take certain periodicals and so-called economic service, but we do not use any manuals such as Moody's, Poor's and Standard Statistics in connection with them. It is quite possible occasionally that we do consult those manuals in connection with our work. Our library subscribed for them and they are available in the library for any one in the company who wants to refer to them, and I think they are referred to by people in my division, but I have never seen them in actual use, and I would not be apt to because if they are used they are used in a different office. We have a general library in the Comptroller's Department which is available for all of those who wish to consult any book in it, and books are consulted for the purpose of obtaining information. The use of the material by others in the company would indicate that the library serves a useful purpose and is worth what it costs. As to the useful purpose, I cannot say in detail. I can state the general phil-

osophical conclusion but in my judgment it is desirable for persons connected with a large organization to have reasonably ready means of acquainting themselves or continuing to be acquainted with a fair amount of what goes on in
775 the world outside of their immediate day-to-day job.

Referring to Defendants' Deposition Exhibit 51, under the heading "Chief Statistician" the first of the subdivisions is entitled "Industrial Surveys and Population Studies." That group advises the associated companies when called upon in relation to questions involving the present or prospective population in their territory and in respect of any studies which they may undertake looking toward an industrial survey, so-called, in any part of their territory or in the territory as a whole, those surveys being undertaken for the purpose of aiding the judgment as to what the probable future industrial development of those areas will be.

The subdivision headed "General Economics Statistics" concerns itself with the study of current and prospective business conditions outside of the telephone business and to furnish studies to the Associated Companies based on the results of these studies and with advice and assistance to the associated companies in their own study of business conditions in their respective territories.

The subdivision under the heading "Financial Studies" is engaged in the same character of work as the preceding subdivision except that it pays somewhat more attention to the study of banking conditions and security markets. In our studies of finances and conditions of the bond market and conditions of the stock market, etc., we use the services of Moody's, Poor's, Standard Statistics, but not the manuals. There are other services of that kind. We use those services and have the manuals in the library in my division.

777 Stipulated that the notary need not observe the order of December 4, 1931, requiring the depositions to be returned to the clerk of the court on or before February 1, 1932, but that it could be done later, on or before February 16, 1932.

779 Stipulated that original exhibits identified or offered on the taking of depositions, may not be returned by the Commissioner, but the exhibits may be used as identified when the depositions are offered, subject to defendants giving to plaintiff, on request, copies of any of the exhibits that

they may desire, or giving them the originals.

785 Defendants' Deposition Exhibit 141, being a list of certain patents appearing in report of the Federal Trade Commission to Congress, entitled "The Radio Industry," received in evidence, subject to plaintiff's right to correct if errors are discovered.

Mr. Adcock: At the end of Mr. Otterson's redirect examination we requested the audits of Arthur Young & Company of E. R. P. I. which Mr. Otterson testified had been made by Arthur Young & Company and I think the letter of Mr. Bracelin of January 19th states, as a matter of fact, that there were no audits made and that request—

Mr. Bracelin: Did I say that?

Mr. Adcock: There were no reports made, yes, no reports made, and we wanted the audits made at that time, as stated by the record, in order to save time and for that reason we will probably want to recall Mr. Otterson to ask some questions about that situation, not particularly about the audits, but with reference to the subject-matter that would be covered by the audits.

Form of provisional estimate for year 1931 received in evidence as Defendants' Exhibit 133½, subject to plaintiff's objection as to materiality and relevancy.

795 With respect to Defendants' Exhibits 110 to 119, both inclusive, offered in evidence, defendants offer the following with reference to each one of those exhibits:

Exhibit 111—Prefatory note on page 3, chart appearing opposite page 7 and pages 7 to 28, both inclusive, not heretofore offered.

Defendants' Exhibit 112—Prefatory note on page 3, chart appearing opposite page 7, and all material appearing on pages 7 to 29, both inclusive, not heretofore offered.

Defendants' Exhibit 113—Prefatory note and chart appearing opposite page 8, and all the matter and material appearing on pages 9 to 29, both inclusive, not heretofore offered.

Defendants' Exhibit 114—Front and back of sheet 3, which is the sheet immediately preceding the table of contents and chart opposite page 5.

Defendants' Deposition Exhibit 115—Matter and material appearing on inside of cover page; material appearing on page following the cover page and all material appearing on

pages 5 to 31, both inclusive, not heretofore offered.

797 Defendants' Exhibit 116—Material appearing on inside of cover page and material on sheet following the cover page and of pages 5 to 31, both inclusive, not heretofore offered.

Defendants' Exhibit 117—Material appearing on the inside of cover page and material appearing on page following the cover page and all matter appearing on pages 5 to 31, both inclusive, not heretofore offered.

Defendants' Exhibit 118—Material appearing on inside of cover page and material appearing on the page following the cover page, and all material appearing on pages 5 to 31, both inclusive, not heretofore offered.

Defendants' Exhibit 119—Material appearing on page following the cover page and all material appearing on pages 5 to 23, both inclusive, not heretofore offered.

The defendants offer with respect to each Defendants' Deposition, Exhibit 111 to 119, both inclusive, plaintiff objected on the ground of immateriality, irrelevancy and incompetency, but not to the authenticity of the documents.

HARRY H. CARTER, recalled:

812 *Cross-Examination by Mr. Blackman.*

The Illinois Bell has done sales work in connection with Long Lines special service contracts for approximately a year, and sold during 1931 approximately $5,000 to $5,100 worth. The Long Lines' own sales force in that year did a million twenty to a million thirty-five thousand dollars worth.

About a year ago, Illinois Bell organized a group to sell their toll and special contract services and asked Long Lines to train that group, which was done under my supervision, sending a man to Chicago to train the group and work with them for a matter of a month or six weeks on one occa-

813 sion; later, at Illinois Bell's request, man was sent there for 2 or 2½ months to carry on further work with the group.

Long Lines' sales organization that has been in Chicago for a number of years did all the selling of special services. However, if an Illinois Bell employe got in touch with some

one who desired Long Lines special services, that fact would be reported to our sales organization and further negotiations would be carried on by it. Prior to a year ago, Illinois Bell had three people who were exclusively working on its special contract service sales. During the years Long Lines has had a sales force in Chicago, it has sold services for Illinois Bell which was done as a part of Long Lines own selling work. If we found people who were interested in Illinois Bell special services in addition to our own, Long Lines people would make the sales as the opportunity presented itself.

To sell special contract services requires a study of
814 the customer's communication needs, and our studies sometimes would show that Illinois Bell special services were the only ones required. Sometimes a combination of Long Lines special service and Illinois Bell's were needed. In other instances Long Lines alone; that is, each of the two companies gave the same kind of service.

When I said at page 482:

"They can handle the applicant for service and can go to them and they can negotiate for sale of the service that he desires." I meant Illinois Bell Company's special contract services. The only services that Long Lines covers by contract are special services shown on special forms. The forces of the Western Electric Company are included in the special sales campaign that I refer to.

The employes of the Illinois Bell are not really in a position to sell for us any services because to sell special contract services it requires a considerable amount of tactical knowledge, and the employe body of the Illinois Bell does not have that knowledge. Our sales are generally to very large concerns, such as banks, large manufacturing establishments, and the employe body as such would not have contact with the type of concern; so that the opportunities to sell special services are rather remote on the part of the employes generally.

815 The Illinois Bell would profit from the general sales campaign which I mentioned to a very considerable extent, because Long Lines employes and Western Electric are familiar with the various forms of exchange service offered by Illinois Bell and have contacts daily with their neighbors and friends who are likely prospects for additional services or new services entirely of Illinois Bell. It is comparatively

easy for employes in Long Lines and in Western Electric because of such familiarity. Long Lines employes in Chicago
816 are not really engaged in selling toll service because there is no contract taken for toll. Contracts are only in connection with special services. Toll service is promoted by advertising. The commercial employes of Long Lines at Chicago are on the Long Lines payroll. As to other employes in Chicago, I have not any direct actual knowledge as to whose payroll they are on.

The Long Lines Department has two continuing program special services furnished to the National Broadcasting
817 Company and one to the Columbia Broadcasting Company. The National furnishes service to five stations in the Chicago area and Columbia to two stations in that area; so there are three program special services into Chicago over which broadcasts are sent to seven broadcasting stations in the Chicago area who are over Long Lines to the boundary line.

At the boundary line, the Long Lines plant and the
818 plant of the Illinois Bell are connected, which extends to the studios of the broadcasting companies and from the studios the Illinois Bell's plant is used out to broadcasting stations. The Illinois Bell furnishes all the facilities required within the City. The Illinois Bell furnishes continuing program special services to 14 stations in the Chicago area and no part of the Long Lines plant is used in that service, the Illinois Bell getting all the revenue and maintaining the
819 service.

A continuing program special service is one furnished for any 16 hours continuously daily. Along the route of the facilities there are terminal rooms and repeater stations in which men stand by and observe the quality of the service, seeing to it that the lines and transmission levels are maintained and making all necessary adjustments and supervising to keep the program facility in condition to satisfactorily deliver the program to the radio stations.

There is also a temporary recurring service which is furnished so many hours a day or so many days a week or so many days a month, and in addition to that there is a service furnished for one time only,—a half hour or an hour or a 2-hour basis, which is not a recurring service.

820 Long Lines has at the present time two recurring serv-

ices going into Chicago and it has had on various occasions one time jobs where our plant is used to the city boundary and then connected to the Illinois Bell plant for the recurring service or for the one time service. The facilities and instrumentalities for the recurring service and for the 16-hour are the same and generally the same also for the one night. The Illinois Bell furnishes the facilities exclu-
821 sively on service within the City of Chicago. Special services in Chicago with relation to aircraft operation, toll service and teletype service is furnished in co-operation with Illinois Bell, and Illinois Bell furnishes similar services without our co-operation.

824 *Redirect Examination by Mr. Adcock.*

I have certain information that was requested by defendants with reference to revenue of Long Lines.

Defendants' Deposition Exhibit 142, is a statement covering period from July 1, 1919, to December 31, 1930, showing gross revenue from Long Lines business, together with the Long Lines' share in each case, subdivided first between revenue from message toll services and special contract services, and the latter services subdivided according to the various kinds of those services in effect in the respective years. The term "gross revenue" as used on this statement indicates the amount charged the users of the service. However,
825 the difference between this amount and the amount shown as the Long Lines' share does not represent the entire compensation to other companies for services and facilities furnished by them in connection with this business. To a very large extent compensation to them for facilities furnished is on a rental basis rather than on a pro rata basis. In such cases the rental payment is included in the Long Lines' expenses as a rent deduction. Similarly, compensation to other companies for operating services furnished by them are, to a large extent, reflected in the Long Lines' operating expense account rather than as charged against gross revenues.

Defendants' Exhibit 142 is a correct statement of the matters therein shown as taken from the books of A. T. & T.
826 Defendants' Deposition Exhibit 143, dated January 1, 1931, is an organization chart of the Long Lines Depart-

ment. During the 4½ years that I have been in Long Lines Department, there have been certain changes not only in personnel but additional offices. I refer to a commission going to the Illinois Bell in connection with Long Lines' special contract services. The Commission was accepted by Illinois Bell on June 30, 1930, and became effective July 1st of that year. There was correspondence between Illinois Bell and Long Lines on that subject, copies of which have been furnished us.

828 With reference to article in Bell System Technical Journal of January, 1930, entitled "Telephone Systems of the United States," to which Dr Jewett's attention was called in his testimony, Dr. Jewett states as follows:

"I have reread the article prepared by Mr. Gherardi and me for the World Engineering Congress in Tokyo in October 1929 entitled 'Telephone Communication System of the United States' and reprinted in the January 1930 issue of the Bell System Technical Journal. I think that the article correctly portrays as of 1929 the material covered by it.

I think likewise that it correctly portrays the facts, statistics and forecasts as of the present day except only in so far as these have been modified by progress and developments that have occurred during the past two years or by the altered forward picture which has resulted from the changed economic situation.

Of course there are certain parts of the paper, particularly those relating to commercial and operational matters, in

829 which Mr. Gherardi's opinion is better than my own since they relate to matters with which he is more conversant than I.

While the paper undertook to give an accurate picture, as of 1929, of the telephone communication system of the United States, in a limited space, it must be read with an understanding of the occasion on which it was presented and the audience to whom it was presented.

The occasion was a World Engineering Congress called together for the purpose primarily of reporting on new and outstanding engineering advances in the period since the last preceding international congress. The audience to whom the paper was presented was composed of leading communication engineers from all the principal countries of the world.

Because of the nature and stated purpose of the Congress

and the character of the audience, the paper which Mr. Gherardi and I prepared was not and was not intended to be, as regards the amount of space devoted to the various topics mentioned, an accurately balanced presentation of the research, development and engineering effort that had been or was being expended in the United States.

Since the development of purely local telephone service
830 is involved with many purely local considerations, detailed description of one country's practice is frequently of little interest to the communication engineers of another country—for example, the vast problems of research, development and engineering involved in the introduction of panel type machine switching in the United States are only of general interest to communication engineers elsewhere in the world.

On the other hand, all communication engineers are interested in the problems of longer distance telephony and telegraphy, in international services and in the development of adjunct services.

For these reasons, and also because longer distance services have developed most rapidly, relatively, in the past few years and have involved more radically new things than strictly local telephone service, the portions of the paper dealing with these features of the communication system of the United States are more elaborate in detail than are the other portions of the paper."

830 Mr. Blackman: With regard to matter about which he was interrogated, Q. 191 and Q. 192, p. 319 of the record, Dr. Jewett states:

"I have read over Dr. King's article and I have no comment to offer, as I think it sets forth quite accurately the situation as it existed at the time it was written."

831 With regard to the matter about which Dr. Jewett was interrogated by Q. 196, record p. 322, Dr. Jewett states:

"I have read Dr. Osborne's article and have no comment to make. It sets forth correctly the general principles on which standardization in the Bell System is applied. The limited number of illustrations given are, I think, correct, as of the time the article was written and would today be modified only in detail, as a result of subsequent progress."

With regard to the matter about which Dr. Jewett was interrogated by Q. 197, record p. 323, Dr. Jewett states:

"I have read the marked parts on pages 545, 552, 553 and 554 of Mr. Pennock's article in the October 1925 number of the Bell System Technical Journal. The statements are in accordance with my general understanding, although I am not sufficiently conversant with the details of shop planning or shop operation to make specific comment on the accuracy of the figures used in Mr. Pennock's illustrations."

832 With regard to the matter about which Dr. Jewett was interrogated by Q. 205, record p. 329, Dr. Jewett states:

"I have reread the article which I prepared for the Western Electric News, the house organ of the Western Electric Company and which appeared in the issue of January 1919. I have also reread Mr. Vail's letter of December 11, 1918, to the Postmaster General and his letter of December 16th to Mr. Gherardi and me, which form part of the article. As a popular presentation of a new and highly technical development I think that the article is an accurate statement of the art as it existed at the time the article was written. A similar article and similar letters on the same subject, written at the present time, would undoubtedly employ different illustrations regarding the number of telephone and telegraph channels which it is economical to employ in multiplex operation and different and much shorter lengths of line over which it is economical to employ them. This is because in the 13 years which have elapsed since the article was written very considerable advances have been made as a result of continued research and developmnt work."

With regard to the matter about which Dr Jewett was interrogated by Q. 205, record p. 329, Dr. Jewett states:

833 "I have reread the article 'The Engineering Department of the Western Electric Company' which I wrote for the June 1914 issue of that company's house organ, the Western Electric News. I think that this article, which was designed to acquaint the employees of the Western Electric Company with the general work of the Engineering Department, correctly represents the organization and work of the Engineering Department as it existed in 1914. There is, however, one sentence in the article which taken in connection with the preceding sentence is not strictly accurate. This sentence at the top of the second column on page 3 reads as follows: 'This service trial is under the direct supervision of of the American Telephone and Telegraph and Western Elec-

tric engineers and is designed, not only to make sure that no service conditions have been overlooked, but also to develop any points of mechanical weakness which may not have been discovered in the preliminary laboratory tests.

The statement is accurate so far as concerns the trial installation of developments undertaken in the interest of the Associated Companies. In the case of developments which
— were then undertaken in the interest of the non-associate
834 business of the Western Electric, the American Telephone & Telegraph Company did not participate in the conduct of trial installations. In writing the sentence I presume I had in mind the fact that while a large percentage of the developments undertaken for Bell System use led to trial installations, only an occasional development for the non-associate business involved what were strictly trial installations."

With regard to the matter about which Dr. Jewett was interrogated by Q. 205, record p. 329, Dr. Jewett states:

"I have read Mr. Blackwell's article and have no criticism of any part of it as of the time at which it was written In his outline of the fundamental possibilities and limitations of radio, and in the problems involved in the development of it as a transmission means for electrical communication, the picture as I understand it today is essentially the same as that outlined by Mr. Blackwell in 1922.

In the ten years which have elapsed since the article was written there has, however, been a vast amount of development work done by large numbers of people in all parts of the world, with the result that the field of practical use for radio is today quite different from what it was in 1922. In particular, there have been improvements and refinements in
the transmitting and receiving structures which have
835 tended to increase not only the reliability of service under any given condition but likewise the range of distances over which such service can be given and the number of non-interfering channels which can be provided in any given part of the radio spectrum. More particularly, the developments of the past ten years have tended to widen very greatly the total usable width of the radio frequency spectrum, especially in the region of the shorter wave lengths. As Mr. Blackwell points out in his explanation of fundamental characteristics, this very considerable extension of usable

frequencies at the higher end of the frequency spectrum serves not only very greatly to increase the non-interfering channel possibilities but also it tends likewise to a considerable reduction in the size and cost of the terminal structures.

With the very short wave lengths which are now being experimented with there appears also to be a possibility of employing radio economically over distances which a few years ago were thought to be entirely outside the range of economic utilization.

To the extent that the radio art has progressed very substantially in the last ten year period along the lines indicated, the situation for use as it existed at the time Mr. Blackwell's article was written has been materially altered."

Stipulated that Dr. Jewett if he was recalled would testify in accordance with statements read.

836 Defendants' Deposition Exhibit 144, being an allocation of additional income tax payments covering periods May, 1918, to 1923, both inclusive, and produced by plaintiff at defendants' request, offered and received in evidence.

837 Bond circular of Illinois Bell Company produced by plaintiff at defendants' request, offered and received in evidence as Defendants' Deposition Exhibit 145.

Objection by plaintiff to Defendants' Exhibit 145 on the ground of incompetency, irrelevancy and immateriality but concedes that the paper is a true copy of the bond circular issued and distributed in connection with the sale of bonds shown thereon.

CAJETAN MORSACK, recalled:

838 *Cross-Examination by Mr Blackman.*

At page 435 of the record I was questioned regarding the payments that the Long Lines made to A. T. & T. and I stated at the bottom of the page and at the top of the next page that there was certain work done by the General Department, A. T. & T., for the Long Lines for which the General Treasury was compensated, and I stated that that compensation was in the shape or form of 1½% of the Long Lines' revenue. In addition to those payments, for services performed by the General Department to the Long Lines as distinct from the

services which apply generally to the various companies, the General Department bills the Long Lines for such services such as blue printing, photostatic, general duplicating work and drafting. Also proportionate part of the cost of auditing by Leibrandt, Ross Brothers and Montgomery, who perform the Company audit from the standpoint of the stock-
839 holders. They audit the Long Lines' books each year.

Long Lines also pays the General Department for proportionate part of the cost of conducting the General Medical Department. Pays rental to 195 Broadway Corporation, which is a subsidiary of the General Department. If the General Department furnishes any facilities, special apparatus, it would be charged to Long Lines. I have not any particular case in mind at the present time.

As to the instances that I have just mentioned, I thought of them in this way, that when I was asked the question originally, I had in mind services which are performed by the General Department not only for the Long Lines but for the various Associated Companies and not services performed specifically for the Long Lines. When I was previously asked "Is there anything in addition to that?" meaning the 1½ per cent, and I answered "Not for general services so far as I know," that answer is still correct. These are special services.

The change in the basis for computing the license revenue charged against Long Lines was made in November, 1927,
840 involving payment made in January, 1928. The compensation to the Illinois Bell for terminal loops paid by Long Lines is the same as Illinois Bell would charge an outsider for similar facilities, for example, for telegraph and teletypewriter contract loops, that is, $3.00 per month for the first mile or fraction and 75c per month for each additional quarter mile or fraction, $3.00 a month being the minimum charge.

The charge against the customer for the special contract service in which the loop is involved is a rate per mile per year, depending on the class of service and varying with the hours of service furnished.

841 As to whether there is a separate charge for loops by A. T. & T., as I understand it there is a charge for the drop. It is not specifically for the loop, but the fact that there is an additional drop connected to the service—I would say our commercial man would be better qualified to talk about this particular phase than I. I cannot quote the rates.

Monthly reports, Long Lines, Nos. 1, 2 and 14, covering the month of December for each of the years 1919 to 1930, both inclusive, produced, offered and received in evidence as Defendants' Deposition Exhibits 146 to 181, to which objection is made on the ground of incompetency, irrelevancy and immateriality.

Monthly reports, Long Lines, Nos. 3, 4, 7, 11 and 18 for month of December each year—1919 to 1930, both inclusive, produced. Monthly report No. 3, Long Lines, for month of December each year 1919 to 1930, both inclusive, consisting of 12 sheets, received in evidence as Defendants' Deposition Exhibit 182.

Monthly report No. 4, Long Lines, for month of December each year 1919 to 1930, both inclusive, consisting of 12 sheets, received in evidence as Defendants' Deposition Exhibit 183.

Monthly report No. 7, Long Lines, for month of December each year 1919 to 1930, both inclusive, consisting of 12 sheets, received in evidence as Defendants' Deposition Exhibit 184.

Monthly report No. 11, Long Lines, for month of December each year 1919 to 1930, both inclusive, consisting of 12 sheets, received in evidence as Defendants' Deposition Exhibit 185.

Monthly report No. 18, Long Lines, for month of December each year 1919 to 1930, both inclusive, consisting of 13 sheets, received in evidence as Defendants' Deposition Exhibit 186.

844 And to the offer of said exhibits, plaintiff objected on ground of immateriality, irrelevancy and incompetency.

Monthly Reports, Long Lines, 22A, 22B and 22C and provisional estimates relating to Long Lines, reviewed by Report 22B covering the same period, asked by defendants to be produced, refused by plaintiff.

851 ROBERT W. BURGESS, for defendants:

Direct Examination by Mr. Adcock.

I reside at 440 Pelham Manor Road, Pelham Manor, New York; I am chief statistician for the Western Electric and have been since October 1, 1928; prior to that I was in similar work with that company as senior statistician which extended back to July, 1924, and that was when I became connected with the Bell System. Prior to that I was teaching in col-
lege; am a graduate of Brown University, 1908, degree
852 A.B.; student at Oxford University specializing in mathe-
matics and physics for three years; B.A. there; Doctor of Philosophy degree at Cornell University in applied mathematics in 1914.

I have before me a copy of the Western Electric News for May, 1930, in which appears from pages 3 to 6 and on page 56, an article written by me entitled "An Economist Looks at Our Company." I am familiar with the material that appears in that article. The statements made were true as of the date made without any qualification. If I were to issue a similar article now, I would review some of the facts in the light of recent developments, the depression, and possibly reconsider the phraseology. In general, however, I would say that it was still true.

Said article was received in evidence as Defendants' Deposition Exhibit 188.

882 DANIEL C. COLLINS, for defendants:

He was comptroller for E. R. P. I. and was called to tes-
884 tify with reference to Defendants' Exhibit 187, entitled "Condensed Summary of Results for the years 1927 to 1930, inclusive, monthly report No. 1," and after having stated that the statements on the report were correct, he also stated that the information contained on Defendants' Exhibit 189 was compiled from reports of E. R. P. I. sent to Western Electric, Defendants' Exhibit 189 being a condensed summary of summaries from said reports to Western Electric.

Inasmuch as plaintiff agreed to furnish the break-down of certain items on said exhibit satisfactory to defendants, and as such break-down has been furnished, it is unnecessary to abstract the testimony of Mr. Collins further.

892 CAJETAN MORSACK, recalled:

Redirect Examination by Mr. Goldstein.

All I know about the occasion for the enlargement of the base for license payments by Long Lines Department to the General Department, effective January, 1928, is that it came about in connection with the decrease in the rate used for licensee contract payments coincident with the transfer to the Associated Companies of the instruments. It increased the number of accounts to which the 2 per cent became applicable.

In connection with Defendants' Deposition Exhibit 142, it was stated that the difference between the gross revenue (for Long Lines) and the Long Lines' share does not represent the total payment made to the Licensee Companies by the Long Lines Department for their respective facilities used in connection with the services from which these gross revenues were derived. It was also stated that payments were made by the Long Lines Department in two ways, one by reimbursement of labor performed for the Long Lines Department
893 by the licensee companies, and, two, by rental payments for the use of plant of the licensee companies.

There is a contract between the licensee companies and the Long Lines for the distribution of Long Lines toll message revenues. The license contract provides that the revenues will be divided pro rata according to mileage haul furnished by each company. That arrangement has been in effect since the license contract has been in effect. It has not been in effect, however, with reference to Chicago. The arrangement with respect to Chicago is more favorable to Illinois Bell with respect to the City of Chicago. The arrangement with the
894 Illinois Bell is on the basis of reimbursing it for cost to it of furnishing all plant and facilities in the City of Chicago used in connection with Long Lines' business, plus a return of 10 per cent on the investment in the plant which the Illinois Bell furnishes, which is without deducting depreciа-

tion reserve; that is, 10 per cent of the book investment.
895 That arrangement has been in effect since 1911. I think the City of Chicago is the only city in the United States where this special arrangement prevails. That arrangement still prevails at Chicago.

The arrangement with respect to special contract services varies for different companies. With most of the companies' compensation for the facilities furnished by the Associated Companies in connection with special contract services is on rental basis. That does not apply in the City of Chicago, however. In Chicago, the compensation which I have described applies regardless of the use made of the facilities.

R. D. Q. 170. So that the distinction between the City of Chicago and the rest of the country is this: That in the City of Chicago the Illinois Bell is compensated by a reimbursement of the expenses of operating the Long Lines plant—

Mr. Blackman: No, not operating the Long Lines plant.

The Witness: I have not talked of operating. I have talked of facilities.

R. D. Q. 171. All right; is reimbursed for depreciation and maintenance of the Long Lines plant?

Mr. Blackman: Wait a minute. He didn't say anything about Long Lines plant. He is talking about the Illinois Bell plant.

Mr. Goldstein: You see, the Illinois Bell owns the title to all the plant in Chicago.

Mr. Blackman: Certainly.

Mr. Goldstein: And it is designated as the Long Lines plant, that is, because that portion of the Illinois plant is used exclusively in the Long Lines business.

Mr. Adcock: You mean the Illinois Bell Long Lines plant?

Mr. Goldstein: Yes.

R. D. Q. 172. That is correct, isn't it?

A. That is correct, except that some of it is not used exclusively in so far as the toll message is concerned.

R. D. Q. 173. Where it is not used exclusively, you apportion it?

A. That is right,

So that as to that portion of the plant of the Illinois Bell Telephone Company in the City of Chicago, which is used exclusively for the long distance business of the American

Telephone & Telegraph Company, or that portion of jointly used toll plant which you apportion to the Long Distance business of the American Telephone and Telegraph Company, the Illinois Bell is reimbursed; or is paid, an amount which covers the depreciation and maintenance of the plant plus a return of 10 per cent on its book cost without deducting the depreciation reserve, plus administration, taxes and all of its charges in connection with that plant. The situation today is the same as it was before.

With regard to special contract service revenues there are no additional payments out of those revenues to the Illinois Bell. They get their costs plus 10 per cent. We are speaking entirely of facilities. The old arrangement still prevails as to reimbursements for the employees' labor and commissions, just as it existed before. There has been no change in principle in the City of Chicago since 1925, as far as the long distance service is concerned. There has been a change in respect to paying commissions on special contract services.

The commission arrangement which I stated went into effect on July 1, 1930, applies to the City of Chicago as well as other cities, so far as special contract services are concerned.

Our special contracts are usually designated as serv-
899 ices, that is, a subscriber may have a given service number, a contract calling for a wire between New York and Milwaukee, let us say, with patrons connected at Philadelphia, Pittsburgh and Chicago, so there may be two or three in Chicago on that same wire. If it is a two-way service, that is, providing for communication in both directions rather than in only one direction, then on a contract the monthly charge against the customer is between $2,000 and $4,000 per month; on a full talking or short period talking contract the Illinois Bell would receive as commission for each station in the City
of Chicago or at any other point in its territory connected
900 with that wire, $16.00 commission from Long Lines. That would come out of the $2,000. I don't know how the $16.00 commission was arrived at. $16.00 is in addition to $3.00 a month mentioned. I don't know how long the $3.00 minimum charge for loops has been in existence. I should say at least ten years.

901 The rental basis is arrived at I think as follows: For a particular associated company's territory, we take all the contracts in effect at a given time and make a study of

the revenue of the total mileage involved, thus deriving an average revenue per mile. From that we deduct the costs of operation, including commissions, which are paid to the Associated Companies for work which they do in connection with these contracts, and it is then brought down, that is, deducted from the gross revenue, so that it might be called a sort of net, although it is not a final net, and that figure is used.
902 Referring to Defendants' Exhibit 142, portion allocated to Chicago is not on the basis of revenue but is on the basis of the facilities and service. I do not see how it is possible to determine what portion of Long Lines' gross revenue comes from the City of Chicago so far as special contract service is concerned. It is not possible to show how much
905 toll revenue originated from stations located in Chicago because there is no originating or terminating point there. We do know that in the large cities we have more subscribers for special contract services than in the smaller cities, but we never have made any special study for comparison. I don't think it can be done.

HARRY H. CARTER, resumed:

970 *Redirect Examination by Mr. Goldstein.*

Long Lines Department makes sales of service for the Illinois Bell and the Long Lines does not participate in any of the revenue of the sales. Prior to last year there were no records kept as to the magnitude of such sales; from 1931, because of new interest in sales generally, there are certain reports that have been made in Chicago which have attempted to allocate the selling between the two organizations, that is, Long Lines and Illinois Bell. In the last year such reports show $5,100 worth sold for us by Illinois Bell and we
971 sold for them about the same amount.

There are other records of miscellaneous items of exchange services sold by Long Lines, and the Illinois Bell is going to summarize those results, but either way it would be a comparatively small amount. For example, A. T. & T. makes a contract for special contract services going outside of Chicago and in connection with that service loops are used, which loops are furnished by Illinois Bell. We include in the charge to the customer the amount of money that we paid to the

Associated Companies for loop facilities. The amount of money which the Illinois Bell charges us for the loop is included with the charge for the rest of the service that we bill the customer. It is not shown as a separate item.

(For deposition of Edwin F. Carter, see Abst. Vol. III, pp. 821-833.)

PIERRE W. SAXTON, recalled:

Redirect Examination by Mr. Adcock.

Provisional estimates that come from the Associated Companies are sent to the president of A. T. & T. They are photostated by Mr. Behan's division. I don't know to whom they are distributed. Mr. Behan distributes the provisional estimates.

1019 CR-13 for December of each year, requested by defendants, refused by plaintiff. Plaintiff also refused defendants' request for Quarterly Report 7-A as to the Bell System, Long Lines and Illinois Bell.

CAJETAN MORSACK, recalled:

1020 *Re-cross Examination by Mr. Blackman.*

With reference to redirect questions 196 and 197, I understood the questions to apply to facilities used in connection with Long Lines service other than those in the City of Chicago. With respect to the City of Chicago, the Illinois Bell receives for the facilities and services furnished by it in connection with Long Lines business, a share of the revenue from that business equal to amounts as follows:

First, on message business for each message and report charge originating in the City of Chicago, Illinois Bell receives a commission of 12c; also for each paid message and report charge, it receives an additional amount of 5c for
1021 use of trunks and recording services and facilities; for the use of central office and outside facilities, it receives the cost to it of furnishing such facilities, plus a return of

10 per cent on the book investment; for operating services furnished in connection with this business, it receives the cost to it plus 10 per cent; on 2-way special contact services, it receives commissions in accordance with schedules heretofore mentioned, this commission having been effective July 1, 1930.

Any amount which Illinois Bell must pay to the American Company as licensee revenue with respect to the share of revenue it receives for these various services and facilities, is considered as a cost to the Illinois Bell and is allowed to
1022 Illinois Bell by the Long Lines.

Redirect Examination by Mr. Goldstein.

I cannot say that I have been in Chicago and observed the physical condition as to the plant located in the City of Chicago. I have seen sections of it. I only know in a general way what the 12c charge was intended to cover in the City
of Chicago. It covers such things as collecting, account-
1023 ing, reporting and promotional services and matters of that kind. I cannot say definitely as to whether that charge is intended to cover the use of property but my opinion is it is not. I cannot say that I know positively what facilities the 5c charge is intended to cover.

When I referred to central office facilities, I meant those used in connection with the operation of the long distance business, switchboards, terminal rooms, test boards, Morse boards and all such equipment as that.

1027 Defendants' Exhibit 194 entitled "Distribution of Provisional Estimates, 1932" produced by plaintiff, offered and received in evidence.

1034 (Mr. Arnold states that the patents which have issued in his name are by number as follows:

1,114,845	1,168,270	1,375,481	1,485,156
1,118,172	1,200,796	1,383,690	1,504,537
1,118,173	1,231,984	1,388,450	1,520,994
1,118,174	1,297,309	1,398,665	1,521,852
1,118,175	1,329,283	1,403,475	1,565,302
1,118,176	1,349,252	1,426,807	1,573,367
1,128,279	1,354,939	1,456,528	1,647,765
1,128,280	1,356,686	1,448,550	1,809,099
1,129,942	1,356,687	1,449,372	1,811,839
1,129,943	1,367,224	1,465,332	Re 14,585
			Re 14,752

Of these 41, three only relate by title to radio, namely,

1,231,984
1,367,224
1,375,481.

He also states that the inventions involved are by no means limited to the radio field but are applicable in high frequency transmission circuits in which no radio link is included; that there is, to the best of his knowledge, no patent in the entire list whose usefulness is limited to radio in contradistinction to telephone communication by wire.)

Plaintiff admits that the following is a description of the patents listed above, issued to H. D. Arnold:

Patent 1,114,845, issued October 27, 1914, Electric Relay.

Patent 1,118,172, issued November 24, 1914, Method of Producing Electrical Variations.

Patent 1,118,173, issued November 24, 1914, Electrical Relay.

Patent 1,118,174, issued November 24, 1914, Alternating Current Generator.

Patent 1,118,175, issued November 24, 1914, Electric Relay Apparatus.

Patent 1,118,176, issued November 24, 1914, Negative Resistance Repeater.

Patent 1,128,279, issued February 16, 1915, Electric Wave Amplifier.

Patent 1,128,280, issued February 16, 1915, Thermionic Detector.

Patent 1,129,942, issued March 2, 1915, Gaseous Repeater in Circuits of Low Impedance.

Patent 1,129,943, issued March 2, 1915, Gaseous Repeater in Circuits of Low Impedance.

Patent 1,168,270, issued January 18, 1916, Protection Device for Electric Circuits.

Patent 1,200,796, issued October 10, 1916, Power Limiting Device.

1036 Patent 1,231,984, issued July 3, 1917, Radio Transmission.

Patent 1,297,309, issued March 18, 1919, Manufacture of Vacuum Tube Devices.

Patent 1,329,283, issued January 27, 1920, Thermionic Amplifier.

Patent 1,349,252, issued August 10, 1920, Method of and Means for Utilizing Thermionic Currents.

Patent 1,354,939, issued October 5, 1920, Vacuum Tube Device.

Patent 1,356,686, issued October 26, 1920, Vacuum Tube Device.

Patent 1,356,686, issued October 26, 1920, Means and Methods for Secret Signalling.

Patent 1,356,687, issued October 26, 1920, Methods and Apparatus for Measuring Gas Pressures.

Patent 1,367,224, issued February 1, 1921, Radio Receiving System.

Patent 1,375,481, issued April 19, 1921, Power Modulator for Radio Transmission.

Patent 1,383,690, issued July 5, 1921, Method of Detecting Underwater Vibrations.

Patent 1,388,450, issued August 23, 1921, Transmission of Intelligence.

Patent 1,398,665, issued November 29, 1921, Thermionic Amplifier.

Patent 1,403,475, issued January 17, 1922, Vacuum Tube Circuits.

Patent 1,426,807, issued August 22, 1922, Method of and System for Testing Transmitters or Receivers.

Patent 1,456,528, issued May 29, 1923, Electric Discharge Device.

Patent 1,448,550, issued 3/13/23, Thermionic Amplifier Circuits.

Patent 1,449,372, issued March 27, 1923, System of Telephony.

Patent 1,465,332, issued August 21, 1923, Vacuum Tube Amplifier.

Patent 1,485,156, issued February 26, 1924, System of Distribution.

Patent 1,504,537, Power Limiting Amplifying Device.

Patent 1,520,994, issued December 30, 1924, Electron Discharge Amplifier.

Patent 1,521,852, issued January 6, 1925, Amplifier Circuits.

Patents 1,565,302, issued December 15, 1925, 2-Way Repeater Circuits.

Patent 1,573,367, issued February 16, 1926, Method of Generating A. C. of Variable Frequency.

Patent 1,647,765, issued November 1, 1927, Transmission of Pictures by Electricity.

Patent 1,809,099, issued June 9, 1931, Vacuum Tube.

Patent 1,811,839, issued June 30, 1931, Sound Transmission.

Re-issue Patent 14,585 (1,200,796) of January 14, 1919, Power Limiting Device.

Re-issue 14,752 (1,168,270), November 18, 1919, Protection Device for Electric Circuits.

1037 Defendants' Exhibit 196, being list of patents entitled "American Telephone & Telegraph Company, Patent Purchases ($1,000 or more) other than from Western Electric Company, 1909 to 1930, inclusive," received in evidence.

Defendants' Exhibit 197, entitled "American Telephone & Telegraph Company, Patents Purchased from and Licenses sold to Western Electric Company, Inc., by American Tel. & Tel. Co. and accounting disposition, years 1909 to 1930," offered and received in evidence.

Plaintiff offers in evidence Defendants' Deposition Exhibit 193, to which defendant objected on the ground not proper and further on the ground of incompetency, irrelevancy and immateriality.

1038 Mr. Blackman: Whereas a number of articles appearing in different publications of the Bell System have been marked for identification and offered in evidence, and no witness has been interrogated concerning the same, the offer having been made upon the statement of Mr. Haight that he hoped the objections would be limited to relevancy and mate-

riality, or some such phraseology, with the understanding that counsel on both sides would try to eliminate unnecessary examination of witnesses.

Now, in order to carry out that purpose, it is stipulated as follows:

Each of the articles referred to is stipulated to be actually an article appearing in the publication indicated, and written by the individual whose name is signed thereto.

That said individual was in the employ of A. T. & T. or Western Electric or Bell Telephone Laboratories, or E. R. P. I.

That each of the witnesses, if called, would testify:

1. That he wrote the article.

2. That the article stated his best opinion and understanding of the facts therein referred to, subject to any qualifications that may be set forth by letter from Mr. Blackman to Mr. Haight, to be mailed to Mr. Haight on or before Monday, February 15, 1932.

It is also agreed that counsel for defendants may inter-
1039 rogate any author of any such articles concerning any qualification made, and that such interrogation may be either orally in New York or in writing, and if in writing, will be submitted by plaintiff's counsel to such author for answer.

In view of the foregoing, it is stipulated that the offer of these articles and the objections, if any, thereto, be reserved for the trial.

It is agreed that as to any exhibits which have been only marked for identification, that the offer of such exhibits may be reserved for the trial and the objections, if any, may be made at that time.

Mr. Adcock: Defendants state with reference to the requests made of Mr. Collins of E. R. P. I. in connection with his testimony, that arrangements have been made with plaintiff whereby plaintiff is to furnish certain statements and make available for examination by defendants all the documents and books requested, and that the requests for information from Mr. Collins are therefore withdrawn.

Letter referred to in the foregoing stipulation to be written by Mr. Blackman to Mr. Haight, dated February 15, 1932, with respect to the various articles appearing in the various publications mentioned, is as follows:

1040 Following is letter referred to at pages 1038 and 1039 provided to be written by Mr. Blackman:

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
195 Broadway, New York
Exchange 3—9800

February 15, 1932.

Mr. George I. Haight,
Haight, Adcock, Banning & Fathchild,
209 South LaSalle Street,
Chicago, Illinois.

Dear Mr. Haight:—

I am writing you pursuant to provision on pages 1038 and 1039 of the record.

With respect to the article in Bell System Technical Journal of July, 1930, by H. S. Osborne, the following qualification is made:

"The co-ordination referred to in paragraph (b) on page 439 relates to the co-ordination of the toll circuits with the local plant. In this the toll [illegible] trunks are considered as a part of the toll plant. The co-ordination referred to did not imply that the local plant was in any way engineered with respect to the toll or long distance circuits."

Of course, in many or most cases changes have taken place since the articles were written. I have found it quite impossible to review the hundreds of pages covered by these articles within the time stipulated so will not attempt to make any further qualifications at this time, giving you the benefit of the stipulation. In most cases there will be no qualification of any kind except such as may be due to changed conditions but it may happen that with an opportunity to go into the articles I may find something that is incorrect or misleading, in which case I will call the witness and have him explain if the article is received in evidence.

Very truly yours,

ELB:LCS (Sgd.) EDWARD L. BLACKMAN.

Pursuant to agreement of counsel, the following exhibits, marked as Defendants' Deposition Exhibits 198-205, inclusive, were offered in evidence by defendants and received in

evidence subject to plaintiff's objections thereto other than to the timeliness of said offer:

Deposition Exhibit 198, entitled "Article in Western Electric News, Issue of January, 1929, pages 3 to 6, inclusive, entitled 'The Bell System and Ourselves' by Edgar S. Bloom."

Deposition Exhibit 199, entitled "Article in Western Electric News, Issue of January, 1919, pages 1 to 7, inclusive, entitled 'Enter Multiplex Telephony and Telegraphy' by Frank J. Jewett."

Deposition Exhibit 200, entitled "Article in Western Electric News, Issue of June, 1914, pages 1 to 4, inclusive, entitled 'The Engineering Department of the Western Electric Co.' by F. B. Jewett."

Deposition Exhibit 201, entitled "Article in the Bell Telephone Quarterly, Issue of January, 1929, pages 9 to 24, inclusive, entitled 'Standardization in the Bell System' by H. S. Osborne."

Deposition Exhibit 202, entitled "Article in the Bell Telephone Quarterly, Issue of October, 1922, pages 12 to 25, inclusive, entitled 'Notes on Radio' by O. B. Blackwell."

Deposition Exhibit 203, entitled "Article in Bell Telephone Quarterly, Issue of April, 1930, pages 83 to 91, inclusive; entitled 'Trans-Oceanic Telephone Service—General Aspects' by T. G. Miller."

Deposition Exhibit 204, entitled "Article in Bell Telephone Quarterly, Issue of January, 1923, pages 18 to 31, inclusive, entitled 'Engineering the Long Lines' by J. J. Pilliod."

Deposition Exhibit 205, entitled "Article in Bell Telephone Quarterly, Issue of October, 1928, pages 304 to 312, inclusive, entitled 'By-Products of Telephone Research' by R. W. King."

[fol. 2329] [Title omitted]

[fol. 2330] IN UNITED STATES DISTRICT COU[redacted]

ADDITIONAL OBJECTIONS TO EXHIBITS OFFER[redacted]D-ANTS DURING THE HEARINGS BEFORE JUDGE[redacted]

Each of the following Exhibits is irrelevant, [redacted] without foundation and the comparison therein is [redacted]ing and without support:

Exhibits X-108 to X-151, X-227 to X-262, X-272 to X-304, and X-328 to X-340.

Ex. X-108. This is merely a copy of plaintiff's Ex. A-164 with two columns added showing percentages, which percentages have been improperly used to compute incorrect data with respect to "return on investment to A. T. & T. Co. stockholders" on numerous defendant exhibits.

With respect to Ex. X-328 to X-340, inclusive, the witness presenting the papers, and the only witness who gave testimony concerning the same, testified "I do not know what they mean." (S. M. 2690.)

Plaintiff objects to Ex. X-109 to X-118, both inclusive, as irrelevant, immaterial and incompetent and more particularly for the following reasons:

(1) They are misleading. They use repeatedly the words "return" and "actual return", where there was no money whatever received.

(2) They make comparisons which are misleading.

(3) All of the exhibits show the "percentage of return" so-called, on a basis not of the value of the property devoted to the public use nor the cost of the property to the Illinois Bell Company, but upon the cost of the investment of the American Telephone and Telegraph Company, and not content with that, the return to the stockholders of the American Telephone and Telegraph Company.

(4) The "percentage of return" is developed by the use of two factors which the courts have uniformly rejected as a basis for fair return. Namely, they proceed, first, upon the basis of original investment and not present value, and, second, they deduct the amount shown in the depreciation reserve rather than actual depreciation.

[fol. 2331] (5) The arithmetical procedure followed in developing the return to the stockholders of the American Telephone and Telegraph Company was erroneous and led to absurd results.

Ex. X-119 and X-120 are objected to as irrelevant, immaterial and incompetent, and for the further reasons that an improper comparison of unrelated data is attempted; namely, it compares actual investment in telephone instruments with what investment would have been if the calculations were based on investment at current costs.

Ex. X-121 is objected to as irrelevant, immaterial and incompetent and for the further reason that it is misleading in several respects:

(1) It purports to show a sale of the telephone instruments to the Long Lines, whereas as a matter of fact there was and could be no sale in the circumstances, the instruments merely being transferred from one department of the company to another department of the same company at book value less depreciation reserve.

(2) The exhibit purports to compare a merely bookkeeping treatment of instruments owned by the American Company (against which there was a depreciation reserve of about 49%) transferred to its Long Lines Department and the treatment of instruments actually sold to the licensee companies December 31, 1927 at current value new less 20%. It purports to find as a conclusion that a profit was made on the instruments sold to its licensees, while in reality there was no profit, the statement showing on its face that instruments which cost $46,583,314 were sold to the licensee companies for $38,183,727.

Ex. X-122 is objected to as irrelevant, immaterial and incompetent and for the further reason that par value and percentage holdings of the American Telephone and Telegraph Company are already in evidence.

The only other fact shown by this exhibit, which is a bulky exhibit consisting of six large sheets, which sheets contain many hundreds of figures, is the comparison between the par value of the holdings of the American Company in each of the Bell Associate Companies with the cost of these holdings to the American Company.

It is wholly irrelevant what the A. T. & T. Co. paid for its stock holdings in any of the Associate Companies. These purchases, of course, go back in some instances to 1879.
[fol. 2332] Ex. X-123 is objected to as irrelevant, immaterial and incompetent and more particularly as follows:

This exhibit shows dividend payments by years from 1914 to 1930 of each of the Associate Companies. The dividends which any or all of the companies may have paid in any year in the past has no bearing upon any issue in this case. The earnings, even, would not be relevant, but dividends are purely an arbitrary matter and the amount of the distributions which the directors of the several companies saw fit to declare is wholly irrelevant and immaterial.

Ex. X-124 and X-125 are objected to as irrelevant, immaterial and incompetent and are further objected to on the grounds already stated with regard to X-122 and X-123. These exhibits consist of ten long sheets containing thousands of figures.

Ex. X-126 is objected to as irrelevant, immaterial and incompetent and is further objected to because it is a comparison absolutely without significance as it is a comparison of stock investment return to the American Company from all licensees separately and in total on the basis of dividend yields on capital stock holding of A. T. & T. Co.

Ex. X-127, X-134, X-272, X-273, X-274, X-276, X-278, X-280, X-282, X-294 and X-337 are objected to as irrelevant, immaterial and incompetent and more particularly because they do not show yields or return on fair value but yields on investment in stock. They are further improper because they make comparisons of so-called return to the stockholders of the American Company on the basis of an assumed investment at par in that stock.

Ex. X-128 is objected to as irrelevant, immaterial and incompetent and more particularly because it purports to show profits of the A. T. & T. Co., where the actual thing shown is the difference between yield on stockholdings based on book value and cost of funds to A. T. & T. Co. Such comparison is meaningless.

Ex. X-129. The same objection as to X-128 except the comparison is made between profit on investment in stockholdings in the Illinois Bell and the rest of the System. Comparisons of yields on stockholdings mean nothing in a rate case where it is return on fair value that is relevant.

Ex. X-130 is objected to as irrelevant, immaterial and incompetent and further because its comparison of the earn-
[fol. 2333] ings on investment of the A. T. & T. Co. in each licensee company with that in the Illinois Bell does not prove anything, because it disregards the peculiar situations that may and do exist in the cases of some of the other companies, such as periods of confiscatory rates and insufficient earnings for various reasons.

Ex. X-131 to X-137, incl., X-142 to X-147, incl., X-273, X-274, X-279 to X-282, incl., X-284, X-285, X-296, X-297 and X-298 are objected to as irrelevant, immaterial and incompetent and for the further reason that they are all erroneous because at least a part of the figures upon which the results are based are computed on the basis of incorrect figures for average loans, these loans having been computed on the basis of quarterly averages which are not sufficiently accurate averages for the purpose used.

Ex. X-132 has further the error and fallacy pointed out for X-128 and X-129 relating to so-called profit on stockholdings.

Ex. X-132 to X-135, incl., X-137, X-142, X-143, X-273, X-274, X-281, X-282, X-284 and X-285 are objected to as irrelevant, immaterial and incompetent and further because they involve commingling of interest and dividends and improper comparisons of things that are not comparable. Furthermore, a comparison the basis of which is investment and not return on fair value is of no value.

Ex. X-130, X-137, X-142 and X-143 are objected to as irrelevant, immaterial and incompetent and further because they are based on the incorrect assumption that the A. T. & T. Co.'s investment in stocks of and loans to each licensee is in the same relative proportion as the American Company's investment in stocks of and loans to the Illinois Bell and that each licensee pays the same dividend rate and rate of interest. These exhibits are furthermore vitiated by reason of the fact that they purport to tie up or relate the license payments of the Illinois Bell and other licensee companies with yields on stocks and loans, the two matters having no connection.

Ex. X-138 and X-139 are objected to as irrelevant, immaterial and incompetent and for the further reason that no apportionment to the Chicago area is shown. X-138 gives no consideration for costs related to funds held available for Long Lines—this is inconsistent with X-145.

[fol. 2334] Ex. X-140 is objected to as irrelevant, immaterial and incompetent and for the further reasons:

(1) That in computing the total costs defendants have deducted one million dollars for 1923 up to two and one-half million dollars in 1930, which are termed "Estimated amount of corporate expenses attributable to ownership of System securities and related expenses," which figures are incorrect and without support in the case.

(2) Furthermore, Mr. Heiss' deductions were intended to cover any non-license expenses which might exist in all classes of costs, whereas this exhibit concentrates that to a certain limited number of expenses.

(3) Furthermore, the deductions for costs chargeable to Long Lines and Canada are computed arbitrarily on the basis of license payments and are applied only on a portion of the total costs. The Long Lines license payments are at the same rate but cover a different scope of services.

Ex. X-141 is objected to as irrelevant, immaterial and incompetent and for the further reason that the exhibit is redundant as similar information is included in plaintiff's exhibit A-170 and supporting exhibits.

Ex. X-145 and X-149 are objected to as irrelevant, immaterial and incompetent for the further reasons:

(1) That in passing on the propriety of the return from License Contract services the use of the investment of the American Telephone and Telegraph Company as the sole basis is improper for the reason that many of the services partake of the nature of personal services involving much experience and a high degree of training but little or no physical investment.

(2) That where the amount of the physical property is used as a basis it should be the value and not the book figures for the investment as used by the defendants.

(3) Either X-149 or X-145 is incorrect, even accepting the defendants' figures, for we find a per cent of return computed for the Long Lines Department of 8.82 in X-145 and 19.03 in X-149 for the same year, to wit, 1923; and similar or even greater discrepancies in other years. The reason for these discrepancies is principally due to the method of obtaining the apportionment of the investment.

[fol. 2335] Temporary financing, instruments and funds held available are not applicable to Bell of Canada—temporary financing and instruments (except to a minor extent) are not applicable to Long Lines.

(4) For the above reasons the use of the term "Per cent of Return", as found in these two exhibits, is misleading and without any meaning whatsoever.

Ex. X-146, X-147, X-150 and X-151 are objected to as irrelevant, immaterial and incompetent and for the further reason that they are based on percentages figured in and derived from X-149 in the case of X-150 and X-151 and from X-145 in the case of X-146 and X-147 and are, therefore, subject to all the infirmities of X-145 and X-149.

Ex. X-148 is objected to as irrelevant, immaterial and incompetent and for the further reason that while the figures used in this exhibit are correct and correspond to figures of the plaintiff, however, the title of Line 9 in each one of the groups of figures, to wit, "Balance Available for Additional Return to American Telephone and Telegraph Company" and likewise the legend at the foot of the exhibit under note (b) are misleading and incorrect as the amounts set forth in Line 9 are not balances available for additional return, but against them must be set off other items of cost as, among others, those set out in plaintiff's Exhibits A-198 to A-201, inclusive.

Ex. X-153 being a comparison of cash payments (Illinois Bell to Western Electric with cash obtained by Illinois Bell from A. T. & T. Co.) is irrelevant, immaterial and incompetent. It is an improper comparison of unrelated things.

Ex. X-192, which is CR 51a, entitled "Associated Operating Companies excluding American Telephone and Telegraph Company Long Lines Department, Condensed Summary of Reports for December" (Monthly Report 1a), is objected to for the reason that while it does contain a figure or two of underlying data used by Mr. Crunden in one or two of his exhibits, there has been no quarrel with the figures and no dispute as to its meaning. For that reason including it in evidence unnecessarily pads the record.

Ex. X-193, which is CR 53, an Internal Administrative Report of the A. T. & T. Co. prepared to show on the basis of certain assumptions indicated therein the derivation of the earnings on the capital stock of the company, is objected to as irrelevant, immaterial and incompetent. It

shows among other things the various sources on a percentage basis of the A. T. & T. Co.'s dividend. The arbi- [fol. 2336] trary classifications shown do not permit a segregation of license contract earnings and costs and, therefore, the exhibit has no value, even to show whether there was a gain or a loss on License Contract services.

Ex. X-194 to X-198, incl., which are balance sheets, earnings reports and occupancy reports of the 195 and 205 Broadway Corporations for various years, are objected to on the ground that while they may contain some information which might have some indirect bearing on the reasonableness of the rent expenses in connection with License Contract services, the connection, however, is so remote as to destroy the value of this material even in determining the reasonableness of the License Contract services or any portion thereof.

Ex. X-202, which is an analysis of expense by classes of work done by the Bell Telephone Laboratories for the years 1925-1931, inclusive, is objected to because, while it contains certain figures which were used or taken by Dr. Jewett in his exhibits, it also contains a great mass of other material and there being no dispute about the correctness of any of these figures or any charge that they were used by Dr. Jewett in a manner inconsistent with their sources, it would be an imposition on the court and on the plaintiff to include these reports.

Ex. X-203 and X-204, being cash statements expense report and analysis of expense reports of the Bell Telephone Securities Company for various years, are objected to as irrelevant, immaterial and incompetent. These exhibits show that certain items of expense of the Bell Telephone Securities Company consisted of payments made to the Associate Companies on their billings for work done in connection with the sale of A. T. & T. Co. securities but these figures are not divided between Associate Companies and the connection is too remote.

Ex. X-205 and X-206, are objected to as irrelevant, immaterial and incompetent. They are cash reports; one for the Long Lines and the other for the General Departments of the A. T. & T. Co. and they show merely cash transactions which are no guide to actual earnings or to the costs of License Contract services rendered.

Ex. X-207 and X-208, being statements of A. T. & T. Co. revenues and expenses shown separately for (1) Long

Lines Department, (2) License Contract Operations and (3) Holding Company operations, are objected to because while they do contain some figures which are indirectly relevant to the issues of the License Contract service costs, there is a great mass of figures in these two exhibits which have no relevancy whatsoever and the exhibits are state-[fol. 2337] ments which have been prepared on the basis of the exhibits in the Ohio case and not along the lines of exhibits submitted by plaintiff in this case. There are no inconsistencies between the two but the method is different and the exhibits should be excluded.

Ex. X-209, being Western Electric "Costs of Principal Activities, Charges to Development Account," is objected to for the reason that it is merely a detailed analysis of figures in Dr. Jewett's Ex. A-114 and throws no new light on the subject of the amounts billed by the Western Electric to the A. T. & T. for development work. It is useless and encumbers the record.

Ex. X-210, is objected to as irrelevant, immaterial and incompetent and for the further reason that it merely shows Western Electric, non-Bell and direct Engineering Department expenses, no part of which have been included in plaintiff's exhibits as cost of rendering License Contract services.

Ex. X-211, consisting of balance sheets for various years of the Bell Telephone Laboratories, is objected to as irrelevant, immaterial and incompetent.

Ex. X-212—X-216, incl., consisting of letters from D. F. Houston, President, Bell Telephone Securities Co., to the stockholders of the American Telephone and Telegraph Company concerning various issues of stock and containing questions and answers with respect to the stock warrants and other information, are objected to as irrelevant, immaterial and incompetent. These letters and questions and answers simply advise the stockholders how to take the best advantage of their rights in connection with the new issues of stock. There are statements here and there in these exhibits to the effect that the local telephone office will assist any stockholder as far as possible to take advantage of its rights. A very slight connection between such statements or any other statements in these exhibits to the issue of License Contract costs to the Illinois Bell is so small and remote as to render it of no value as evidence. These exhibits are quite bulky, containing 25 large printed pages.

Ex. X-218, consisting of 13 pages of statements of receipts and disbursements of cash of the Bell Telephone Laboratories for various years, 1925-1930, is objected to as irrelevant, immaterial and incompetent. The figures given in this exhibit include amounts billed to the A. T. & T. Co. which Dr. Jewett included in his exhibits but they also include without any breakdown amounts billed to the Western [fol. 2338] Electric, E. R. P. I. and others. It would be impossible to tie these figures in with any figures on the cost of rendering License Contract services.

Ex. X-225, consisting of a table showing funds of Associate Companies temporarily placed with the American Company until required by the Associate Companies for the years 1923-1930, comparing all companies with the Illinois Bell and seeming to show that the Illinois Bell furnished more money to the A. T. & T. Co. on the average than the other companies. This exhibit is objected to as irrelevant, immaterial and incompetent because there is no evidence that the Illinois Bell was not obtaining a higher rate of interest from these funds deposited with the A. T. & T. Co. than it could have obtained anywhere else in the market in which event, of course, the more money the Illinois Bell was lending to the American Company, the more benefit it was deriving from the License Contract services. Furthermore, this type of evidence is valueless unless the specific circumstances surrounding each deposit of funds with the A. T. & T. Co. are shown.

Ex. X-227-262, incl., (except X-252, X-253, X-254, X-255 and X-256) are objected to as irrelevant, immaterial and incompetent and particularly because all of them deal with the yields on bonds or stocks of various public utility corporations; including the Bell System and railroad companies, and comparisons of such yields and comparisons of the yields on such securities classified according to the ratings given by Moody's Manuals, and some of the exhibits also make comparisons of the yields on other bases. Some of the exhibits show the comparisons in the form of figures and others in the form of charts. None of these exhibits are of any value to the court in determining the issue of confiscation as not one of them takes into consideration the value of the property or the entire earnings of the company. The comparisons are made without reference furthermore to the particular capital structure; that is, the relationship between capital stock and funded debt

and the relationship between the total capital stock and funded debt and the amount of property behind the bonds and stock.

Furthermore, some of these exhibits contain comparisons of ordinary bonds with bonds which have convertible features and whose prices will necessarily be affected whenever the convertible feature becomes attractive to the bondholder.

The following exhibits are improper for the further reason that they compare things which are not comparable, namely, they compare the yields on bonds of the highest ratings issued by the Bell System with bonds of much lower ratings issued by railroads and other public utilities: X-227, X-228, X-229, X-235, X-236, X-237, X-246, and X-247. [fol. 2339] Ex. X-250 and X-251 which purport to show an average yield on common stocks as compared with an average yield on bonds, are objected to as irrelevant, immaterial and incompetent and further because they are wholly without foundation. The comparisons are meaningless and without validity for the following reasons, among others:

(1) The comparison between the retail prices obtained on the stock exchange for small amounts of stock or bonds is no indication of the price or prices at which such stock or bonds could be sold wholesale or in amounts sufficient to refinance or provide in substantial part the requirements of the corporation in question.

(2) The comparison is between interest paid and dividends paid; not between interest paid on bonds and earnings on the stock. This is an improper basis and comparison.

(3) There is no proper proof of any basis for the selection of the stocks and bonds compared.

Ex. X-252 and X-253 are objected to as irrelevant, immaterial and incompetent and for the further reason that the so-called source of funds invested in fixed capital of the Illinois Bell Telephone Company, the Commonwealth Edison Company, the Peoples' Gaslight and Coke Company, either separately or compared, are entirely irrelevant to any issue in this case. The Illinois Bell owns certain property which it devotes to the public service. It is entitled to a fair return on that property regardless of the source

of the funds invested therein. The fact that it may have raised 15.7 per cent of these funds through funded debt, 51.5 per cent through capital stock sales, 8.2 per cent from surplus, 23.8 per cent by investment of its reserves and .08 per cent in other ways is of absolutely no assistance to the court in making the findings of fact required by the issues, amd the further fact that the investment in fixed capital of the Commonwealth Edison and Peoples' Gas was made from different sources or from the same sources in different proportions is of no value.

Furthermore, the very fact that the ratio of funded debt, capital stock, etc. of the Commonwealth Edison and Peoples' Gas is different from the same ratios in the case of the Illinoïs Bell vitiates any conclusions that can be drawn from the comparison with them and makes them irrelevant. X-253 is merely the tabulation showing detail of the data shown on chart form on X-252.

Ex. X-254 which purports to show the source of funds invested iin fixed capital by the Illinois Bell from 1913 to [fol. 2340]] 1931, inclusive, as divided between fixed capital reserves, ffunded debt, advances, capital stock, surplus and excess of met fixed capital, together with X-255, which shows the same information in tabulation form, are objected to for the same reasons as X-252 and X-253.

Ex. X-256 is objected to as irrelevant, immaterial and incompetemt and for the further reason that the comparison offered by it is wholly irrelevant and misleading. The exhibit faiils to take into account the values of the properties of tthe various enferprises, the value being a most important factor in determining the rate at which funds could be obtained. Furthermore, the comparison takes no account of the difference in capital structure and the difference in the proportion of the total capital invested represented by ffunded debt and by stock.

The cost of funds shown in the exhibit is a weighted average off the dividends from the capital stock and the interest om funded debt and on interest bearing loans. It is obviously improper to compare mixtures consisting of two or more ingredients in varying proportions. Furthermore, using the dividends paid instead of the per cent of profit earned makes the whole comparison worthless.

Ex. X-261 and X-262 are objected to as irrelevant, immaterial and incompetent and for the further reasons that they will encumber the record with hundreds of pages of

tabulations in every conceivable form of data concerning bond issues of the Bell System and other public utility, railroad and industrial concerns without any mention anywhere of the value of the properties involved or the net earnings of the corporations.

Ex. X-285 is objected to as irrelevant, immaterial and incompetent and for the further reasons that:

(1) It sets forth certain dividend yields to the American Telephone and Telegraph Company from the dividends paid by the Illinois Bell Company which are in no way relevant as the issue is "What is the return on value" and not "dividend yield on stock".

(2) Furthermore, a comparison is made between dividend yields on the American Telephone and Telegraph Company's investment in the Illinois Bell and that on its investment in all Licensee Companies combined in the attempt to show that the yield is greater in the Illinois Bell investment. This comparison is irrelevant as it can produce no conclusions with respect either as to dividend yield [fol. 2341] or to the return on the property of the Illinois Company, without taking into consideration all the individual peculiarities of the capital structure in each company, and of other pertinent circumstances.

(3) Furthermore, certain of the sheets involve commingling of interest and dividends and improper comparisons of things not comparable.

(4) Furthermore, these comparisons are irrelevant and immaterial because they are comparisons between dividends and undivided profits and surplus of the Illinois Bell with all Licensee Companies taken together when as a matter of fact some of the companies were engaged in legal contests in the attempt to obtain fair rates of return.

Ex. X-286 is objected to as irrelevant, immaterial and incompetent and because it purports to show merely the percentages of undivided profits and dividends of the American Telephone and Telegraph Company which are in no way in issue either directly or collaterally in this case.

Ex. X-287 is objected to as irrelevant, immaterial and incompetent and for the further reasons that:

(1) Comparison of Line 3, representing Undivided Profits, Interest and Amortization Charges with Line 4 is

not a proper comparison to obtain per cent of return for funds used in business for the reason that the fourth line, while it is the same figure used by plaintiff in computing its cost of funds in Ex. A-164, does not contain the total of assets in which the plaintiff has its funds tied up, but leaves out such items as Depreciation Reserves, Excess of Receivables over Liabilities, and other items.

(2) Furthermore, it is immaterial in this case what per cent of return the American Company earned on the funds used in its business, whether the figure which is the basis of the percentage includes all the various assets into which its funds found their way or not.

Ex. X-290 is objected to as irrelevant, immaterial and incompetent and for the further reason that the per cent of undivided profits and dividend payments with respect to the proportion of the total stock representing the Long Lines Division is not material, and for the further reason that in figuring such per cent the defendants have taken [fol. 2342] the par value of the capital stock as the basis of the rate instead of the value of the property devoted to the Long Lines service.

Ex. X-291 is objected to as irrelevant, immaterial and incompetent and for the further reason that even a properly computed rate of return upon so-called holding company activities would be immaterial. No valid comparison of per cent of undivided profits and dividends on capital stock can be made without a consideration of the amount of funded debt and the interest paid thereon.

Ex. X-292 is objected to as irrelevant, immaterial and incompetent and for the further reason that the per cent of undivided profits found in the eighth column is based on the capital stock of the American Telephone and Telegraph Company at par and not on the value of the assets devoted to the rendition of License Contract services. The exhibit furthermore is meaningless because a large part of the License Contract services are personal in character and cannot be measured in terms of return on investment.

Ex. X-293, X-294 and X-295 are each objected to more particularly because a comparison is made between earnings and investment on the basis of amount of money originally invested by the American Company going back to 1882, and the great surplus which has been built up over the fifty years of operations is completely ignored.

Ex. X-296, X-297 and X-298 are objected to as irrelevant, immaterial and incompetent and for the further reason that the percentages shown therein mean nothing because they are based on investment in the case of X-296 rather than the value of the property, and in the case of X-297 they are based on the capital and surplus rather than the value of the property, and in the case of X-298 they are based on capital stock at par rather than on the value of the property.

Ex. X-298 is objected to for the further reason that it sets forth a return to the stockholders of the American Company on the basis of their assumed investment in that stock at par. They are objected to for the further reason that all three of these exhibits contain percentages which are based on allocations and earnings subject to the same infirmities as pointed out in objections to X-145.

Ex. X-299 and X-300 are objected to as irrelevant, immaterial and incompetent. There is furthermore no value in the comparisons of percentages made in the exhibits as they are all based on book figures instead of value and they purport to show that the percentages of earnings to investment [fol. 2343] of the Illinois Bell Company is a little greater than the average of the whole Bell System without indicating in any way why some of the other companies show poorer results.

Ex. X-301 is objected to as irrelevant, immaterial and incompetent. The rate of return earned by the Long Lines Department is irrelevant in this case, particularly when it is based on book figures less depreciation reserve rather than fair value.

Ex. X-302 is objected to as irrelevant, immaterial and incompetent and for the further reason that it purports to compare return earned by the Illinois Bell with that of all Licensee Companies, and all licensees excluding the Illinois Company, which comparison is of no value in the case. Were the comparison a material one it would be vitiated by the fact that "Average Accrued Depreciation", meaning, of course, the reserve for depreciation, had been deducted in each case, and because the bases of figuring the returns are all book figures and not fair value.

Ex. X-303 and X-304 are objected to as irrelevant, immaterial and incompetent and for all the reasons set out in the objections to X-302. These exhibits purport to compare the results of X-302 with percentages of return as

shown in certain MR and CR reports. Such a comparison is meaningless in a rate case as the MR and CR reports are merely administrative reports of the company and are themselves based on book figures and not on fair value. The fact that the company in its internal administration for convenience uses its book figures is no justification for the defendants in a rate case putting forth exhibits and showing rates of return based on the books.

Ex. X-308, being Schedule from American Telephone & Telegraph Company's reports to I. C. C. and Illinois Commerce Commission showing details of American Company's "Long Term Advances to these Companies" 1920-1930, is objected to as irrelevant, immaterial and incompetent.

Ex. X-328 is irrelevant, immaterial and incompetent. It purports to show return but uses a base that is book cost less reserve for depreciation and also excludes cash working capital. The notes in the exhibit are misleading and it makes improper comparison.

Ex. X-329 to X-332, incl., and X-334 are objectionable for the same reasons as Ex. X-328, and an additional reason because in the year 1923 the adjustment for rates attacked [fol. 2344] is for three months instead of being treated on an annual basis. They do not show the various considerations affecting the individual companies and therefore any comparison between them is meaningless. Furthermore, these Exhibits merely develop a comparison between certain operating results of the Illinois Bell with other companies without bringing them to a common basis.

Also Ex. X-329 assumes the correctness of straight line depreciation for accounting for the Associate Companies but rejects it for the Illinois Bell. Also, the comparison is on the basis of cost less reserve for depreciation and not value.

Ex. X-333 is objected to for the same reasons as Ex. X-328 to X-332, as it contains figures carried forward from Ex. X-330, X-331 and X-332. Furthermore, it continues the erroneous comparison of return of Illinois Bell (Chicago) with other licenses.

Ex. X-334 is objected to as irrelevant, immaterial and incompetent and for the further reason that the return figures shown in the exhibit are based on book figures and not upon value and that they deduct "average accrued depreciation" and that a comparison between the return earned by the

Illinois Bell, even though properly computed, with the return earned by other Licensee Companies without showing the individual considerations affecting the various companies is meaningless. This exhibit is further objected to for the same reasons as objections to X-328.

Ex. X-335 is objected to as irrelevant, immaterial and incompetent.

The "cost of funds" to the Illinois Bell developed in this exhibit is made up principally by the price which the American Company pays for the stock which it purchases. The fact that the American Company pays par for stock paying 8 per cent is no indication of what it would cost the Illinois Company to obtain money in the open market.

Ex. X-336 and X-337 are irrelevant, immaterial and incompetent. These exhibits purport to show the return required on reproduction cost necessary to enable the company to pay interest and an 8 per cent dividend. The exhibits can have no meaning as the rate of return would decrease as the ratio of capital investment to value of property decreased, and in the case of a grossly overcapitalized utility, the rate according to these exhibits would be very high. X-337 is further objectionable because it purports to show rates of return to Illinois Bell and to the A. T. & T. Co. stockholders by converting certain stated rates of re- [fol. 2345] turn assuming stockholders' investments at par. In other words, the more water that was poured into the stock the higher return it would be entitled to.

Ex. X-338 is irrelevant, immaterial and incompetent, this exhibit being based on book cost of plant investment and deducted depreciation reserve instead of fair value.

Ex. X-339. The same objections as to Ex. X-338 except that in X-339 an amount even greater (about 50 per cent greater) than the book reserve for depreciation is deducted. In other words, the reserve is stepped up to an inflated reproduction cost level on some theory and is then deducted.

Ex. X-340 is irrelevant, immaterial and incompetent. The rate of return found by this exhibit is based on a figure for reproduction cost from which the reserve for depreciation has been deducted and on income figures to which have been added erroneous so-called adjustments for what is called income due to license payments and an adjustment for what defendant claims is a too high depreciation expense.

Ex. X-346. This paper is an order of the Public Utilities Commission of Illinois with voluminous recitals. It is irrelevant to any issue presented in this case and relates to conditions in 1919 and prior thereto. Furthermore, said paper is incompetent as the order of the Commission is not evidence of any facts therein recited or determined.

Ex. X-355. This exhibit consists of 37 sheets made up of excerpts from numerous provisional estimates of companies of the Bell System other than the Illinois Bell Company, together with the letters of transmittal of said documents. The huge mass of figures contained in these papers is not contradictory of any evidence submitted by the plaintiff and is not in support of any claims asserted by the defendants and the papers are irrelevant. Furthermore, the papers and statements are estimates and prophecies by officers of companies not a party to this litigation and not witnesses. It is apparent no statement contained in the papers could be considered as an admission against or receivable in evidence without calling the author of the statement, calling his attention to it and giving an opportunity for explanation. Therefore, the statements as offered are incompetent.

Ex. X-373. This exhibit is objected to on the following grounds:

It is a handbook of outside engineering practices of the American Telephone and Telegraph Company and Associate Companies and consists of 104 large printed pages [fol. 2346] with mathematical formulas, tables of figures, etc. So far as plaintiff can see there is nothing contained therein that is in any way contradictory of any claim made by the plaintiff or in support of any claim by the defendant and the entire document is irrelevant. Objection is further made that plaintiff cannot be contradicted or defendants supported by some isolated statement in this large document by offering the whole mass of sheets in evidence without explanation, without pointing to the relevant portion thereof and without affording an opportunity to explain. For these reasons the paper is both irrelevant and incompetent.

Ex. X-396. This is an agreement entered into November 1, 1880. This contract was not in force during any of the

years covered by the present litigation. It is too remote and is irrelevant and immaterial.

Ex. X-401. These papers are a re-offer of papers offered in the previous trial and excluded. They contain a mass of figures concerning the Central Union Telephone Company, one of the companies which operated properties in Illinois which were acquired by the plaintiff in 1920. These papers are objected to upon all the grounds stated when they were originally offered and upon the further ground that no explanation is made of their purpose, and no item or items which tend to contradict plaintiff or support defendant are pointed out and that the offer of the papers in the manner made is improper and the papers are irrelevant and incompetent.

The exhibit is objected to on the further ground that none of the property in question was in the Chicago area and is in no way the subject of the present litigation.

Ex. X-402. This is an offer of "all correspondence between counsel and parties in this case" and consists of 487 pages. Any admissions or concessions contained in the correspondence have been availed of by the defendants and except for a few specific admissions and concessions the papers bear upon no issue in the case. The offer in evidence of this numerous mass of papers without explanation or indication of any object connected therewith is improper and the papers are objected to as irrelevant, incompetent and as a padding of the record.

Ex. X-403 is a written statement purporting to show the number of pages contained in several hundred MR and CR Reports of the American Company. There was no proof of the figures on the papers and they are wholly incompe- [fol. 2347] tent. Furthermore, these papers were doubtless offered to show the bulk of the material which defendants claimed the right to inspect and which right was not accorded them at the time when demanded. The papers were afterwards furnished, were in the court room for weeks and under the ruling of the court, defendants were afforded such time as they requested within which to make examination thereof.

Ex. X-420 consists of 293 pages of various minutes of the Executive Committee of the American Company and of agreements executed pursuant thereto. No part or portion of any of these papers has been pointed out by defendants

as bearing upon any issue in this case but they have merely been offered en masse. Such procedure is objected to and the receipt of the papers in evidence is objected to on the ground that they are irrelevant, immaterial and incompetent and if admitted would unreasonably pad the record.

Ex. X-424 was an agreement entered into between the Central Union Telephone Company and the American Company dated February 15, 1894 and has to do with traffic arrangements between the two companies and a division of territory. The Illinois Bell Company purchased the Illinois property of the Central Union Company in 1920. None of the property, the subject of the contract in question was situated in the City of Chicago. For the above reason the agreement is irrelevant, immaterial and incompetent—too remote.

Ex. X-435 consists of some 45 pages of figures and tabulations, some of which relate to the Illinois Bell Company and some to other companies of the Bell System. None of the figures so far as plaintiff knows, contradicts any claim of the plaintiff or sustains any claim of the defendants. Nothing has been pointed to therein as having this effect, but this great mass of figures is just shoveled in en masse. Plaintiff objects to this procedure and objects to the papers as irrelevant, immaterial and incompetent.

[fol. 2348] ADDITIONAL OBJECTIONS TO DEFENDANTS' EXHIBITS IN CONNECTION WITH DEPOSITIONS TAKEN BY DEFENDANTS

Defendants have offered in evidence one hundred ninety-seven (197) exhibits consisting of printed matter. One individual exhibit consists of as much as 200 pages; many of them are long and consist of a score or more pages. The total bulk of the material offered amounts to several thousand pages. A general objection that the exhibit is too remote and is immaterial is made to each of the following of said exhibits:

1 and 2.
8-36, incl.
40-48, incl.
50-50B, incl.

79-103, incl.
110-133½, incl.
136-139, incl.
141.
146-181, incl.
183-188, incl.
192.

Ex. 1. This is an article of 100 pages which deals generally with the Bell System and telephony in America. It is too remote and will uselessly encumber the record.

Ex. 2. This is a printed book of over 200 pages giving an alphabetical list of 1620 research laboratories in the United States with a brief statement of the staff and scope of the work of each. It is irrelevant, immaterial and too remote.

Ex. 7. This paper as shown by the testimony was prepared by one, Van Cise, for the purpose of making an allocation of certain expenses of the Treasury Department in a particular manner. Van Cise was not called as a witness, no testimony was offered in support of the paper and, on the contrary, it appeared that it was not intended as a proper allocation of the expenses in the Treasurer's Department. The paper is wholly incompetent and without foundation.

Ex. 8. This exhibit, together with Ex. 9, 10, 11, 12, 26 and 32, are articles dealing with the work of the Treas-
[fol. 2349] urer's Department of the A. T. & T. Co. The statements are general and the matter contained is immaterial and too remote.

Ex. 13. Too remote.

Ex. 14. This is included in Ex. 1. It is a map showing certain special contract telegraph services. It is irrelevant, immaterial and incompetent and too remote and unnecessarily pads the record.

Ex. 15. This is included in Ex. 1. It is a map showing certain special contract telegraph services. Iit is irrelevant, immaterial and incompetent and too remote and unnecessarily pads the record.

Ex. 16. This is included in Ex. 1. It is a map showing certain special contract telegraph services. It is irrelejimmaterial and incompetent and too remote and unnecessarily pads the record.

Ex. 17. This exhibit is an article relating to the accounting methods in the Long Lines Department. Its statements are too general to bear upon any issue in the case and it is immaterial and too remote.

Ex. 18. This is an article describing in general terms the carrier systems on long distance telephone lines. Matter contained in the Exhibit is too general to bear directly on any issue in the case. The Exhibit is immaterial and too remote.

Ex. 21, 22, 23, 37, 38 and 39 (See Ex. 18) are all likewise articles relating to technical phases of the work of the Telephone Company engineers. They are all general in their terms, contain no contradiction of any evidence introduced by plaintiff, do not bear directly on any issue in the case, and are so general in their terms that they are each of them immaterial and too remote.

Ex. 19. This is an article which contains a number of general statements and comparisons concerning the development of telephony in the Bell System. The article is general in its terms, is not contradictory of any evidence offered by the plaintiff, does not bear directly on any issue in the case and is immaterial and too remote.

Ex. 20, 25, 27, 29, 35, 36 and 188 are of the same general character (see Ex. 19) and are immaterial and too remote. [fol. 2350] Ex. 24. This is a description of the telephone typewriter and auxiliary services rendered by the Long Lines and Associate Companies. The article bears on no issue in the case and is immaterial and too remote.

Ex. 28. This is an article dealing with the Budget Plan of the Bell System. It is already in evidence that the Budget Plan is employed by the A. T. & T. Co. and other System Companies and the general manner in which they operate those plans. The article in question bears on no matter in dispute, is general in its terms and is immaterial, too remote and pads the record.

Ex. 30. This is an article which deals with a great number of so-called auxiliary services rendered by the Bell System, including portable telephones, head receivers, deaf sets, private branch exchanges, electrical stethoscopes, etc. There was no issue in the case concerning the fact that these services were rendered, the article is general in its terms, is immaterial and too remote.

Ex. 31. This is an article which consists of a number of generalities concerning what the author calls "Radio Tele-

phone Situation". It is irrelevant, immaterial, incompetent and too remote.

Ex. 33. This is an article dealing with an activity of the Electric Research Products Inc.—"The Measurement of Noise". There was no dispute that E. R. P. I. was engaged in this business, the article adds nothing to the conceded facts and is immaterial and too remote.

Ex. 34. (See Ex. 28.) Is if the same general character and the same objection is made to it.

Ex. 40 is the Annual Report of the American Company for the year 1920.

Ex. 41-48, incl. (see Ex. 40), Ex. 50, 50A and 50B are also Annual Reports but for other years. These reports aggregate 300 pages of printed matter. They bear generally on the telephone situation and give statistics. No one of these reports bears directly on any controverted matter and each one of them separately and the whole mass collectively are immaterial and too remote.

Ex. 79. This is a form of report used in the Comptroller's Department of the American Company. It gives no figures but merely shows the form in which the information is reported.

[fol. 2351] The same is true of Ex. 80-103 and 122-133½ (see Ex. 79). These are all irrelevant, immaterial and incompetent. In practically all cases the reports themselves have either been put in evidence or used by defendants. It would be outrageous to pad the record with several hundred pages of these blank forms where there is no dispute as to the fact that the company had the information and where in all or practically all instances it has been furnished to defendants.

Ex. 110 is a substantial portion of the issue of the Bell Telephone Securities Manual dated 1931.

Ex. 111-119, incl. (see Ex. 110), are portions of other issues of the same manual. The pages of these publications offered in evidence contain a great many financial facts. None of the statements in any of the exhibits in question contradicts any evidence offered by plaintiff. In many cases the facts set forth in each of the exhibits is the same and there is great and unnecessary repetition through the offer of all of the exhibits. Ex. 110 and each of the other exhibits are objected to as irrelevant, immaterial and too remote.

Ex. 120. This is a publication of financial facts concerning the Bell System. It in no way contradicts any evidence

offered by the plaintiff, has no direct bearing on any issue in the case and is immaterial and too remote.

Ex. 121 consists of a collection of quotations from newspaper articles generally commendatory of the Bell System and of its securities. It is objected to as irrelevant, immaterial and incompetent, without foundation and too remote.

Ex. 146. This is a monthly report of the Long Lines Department of the A. T. & T. Co.

Ex. 147-181, incl., are also monthly reports of the Long Lines Dept. These constitute a mass of papers which are not contradictory of any evidence introduced by plaintiff. They are immaterial, irrelevant and too remote. It is true that plaintiff has used some of the exhibits above mentioned as a source of some isolated figures used by it in developing ratios. However, there has been no attack or criticism upon any of the figures used by plaintiff and with the exception of a few figures the reports are masses of facts and figures which have no bearing whatever upon the issues involved.

[fol. 2352] Ex. 191. This exhibit consists of the first 50 pages of a document entitled "Radio Industry", published by the Federal Trade Commission in 1924. It contains much of general interest concerning the radio industry and the part played therein by the American Company. However, the facts stated are very general, they are not in contradiction of any of Plaintiff's evidence and the exhibit is irrelevant, immaterial, incompetent and too remote.

Ex. 192. This is an extract from the appendix to Appellant's Brief in the previous trial showing certain license contracts and correspondence connected therewith between the American Company and the Southwestern Bell Company. It was conceded that the papers were authentic. It is objected to that they are irrelevant, immaterial and incompetent and have no bearing on any issue in this case.

[fols. 2353 & 2354] IN UNITED STATES DISTRICT COURT

[Title omitted]

Part I

DEFENDANTS' ANSWERS TO PLAINTIFF'S OBJECTIONS TO EXHIBITS OFFERED BY DEFENDANTS IN THE HEARINGS BEFORE JUDGE WILKERSON—Filed December 10, 1932

Ex. X-108

Plaintiff's objection is: The percentages shown in Exhibit X-108 "have been improperly used * * * on numerous defendants' exhibits."

Defendants' answer is: (1) Plaintiff admitted the mathematical correctness of the percentages in Exhibit X-108 and their use as computations in the other exhibits (N. R. IV, 1434); (2) plaintiff's attack on their use in other exhibits [fol. 2355] is answered in Defendants' Brief, pages 86-89, wherein it is shown that the attack was based on a misunderstanding of Bell System practice and its application to plaintiff's operations. The use of the percentages appears in Defendants' Brief, pages 58, 60, 62, 69, 81, 83, 84, 86, 247, 344, 1033, 1034.

Ex. X-109-118.

Plaintiff's objection is: (1) These exhibits "use repeatedly the words 'return' and 'actual' return, where there was no money whatever received."

Defendants' answer is: Plaintiff's objection is based on the theory, as stated by its counsel (Record pp. 5255-9), that because it paid for the rental of the telephone instruments plus other services a per cent of its revenues and did not pay the rental as a separate payment, the American Company received no money whatever for rental of telephone instruments. And this would be true even though the Commission's allowance was based upon a separate allowance for rental and for other services. The objection falls with the theory.

Plaintiff's objection is: (2) The exhibits make comparisons which are misleading.

Defendants' answer is: Plaintiff does not state wherein they are misleading. Defendants' Brief, pages 7 to 92, uses

these comparisons which clearly indicate just what they purport to show.

Plaintiff's objection is: (3, 4 and 5) The return is based on book cost instead of reproduction value and is expressed as a return to the American Company in its entire investment and on its equity investment.

Defendants' answer is: The basis is in conformity with defendants' position and in conformity with the law ap- [fol. 2356] plicable under the special circumstances involved therein, as shown in Defendants' Brief, pages 65 to 80. Plaintiff's attack is based on a misunderstanding of Bell System practice and its application to plaintiff's operations as shown in Defendants' Brief, page 86.

Ex. X-119–X-120

Plaintiff's objection is: The comparison is between actual cost and current cost, which are "unrelated."

Defendants' answer is: These exhibits merely show the per cent by which Mr. Heiss has inflated the book cost to arrive at what he claimed was current cost as a basis on which a fair return should be computed. The impropriety of such inflation under the special circumstances in the record is discussed in Defendants' Brief, pages 71-75.

Ex. X-121

Plaintiff's objection is: The telephone instruments were not technically sold to the Long Lines.

Defendants' answer is stated fully in their Brief, page 39, from which it clearly appears that the discrimination between the American Company's treatment for rate making purposes of the telephone instruments in 1927 in respect to the Long Lines and the licensees does not depend on the question as to whether a technical sale occurred in the one case or in the other case.

Plaintiff's objection also is: The American Company did not profit on the sale of the instruments to the licensees to the extent of $14,395,799 because the selling price was less than the original undepreciated cost, even though the selling price was $14,395,799 more than the depreciated cost.

[fol. 2357] Defendants' answer is: Plaintiff's theory is absurd. Assume an article originally costs $1,000,000 and, the entire amount had already been recovered through rates

by plaintiff. If such article were sold at the date of retirement for $250,000, plaintiff's theory is that the salvage would not be profit because it was less than the original cost.

Ex. X-122

Plaintiff's objection is: (1) The exhibit compares the par value and book value of the American Company's stock-holdings, which are irrelevant.

Defendants' answer is: There is no comparison. The exhibit states the facts as of the end of each year as a basis for the determination of the average holdings as shown in X-124, which latter exhibit is a very important exhibit, as appears below. X-122 was offered to give plaintiff an opportunity to check the figures from which X-124 in part was computed.

Ex. X-123

Plaintiff's objection is: The dividend rates are irrelevant because dividend payments "are purely an arbitrary matter and the amount of the distribution which the directors of the several companies saw fit to declare is wholly irrelevant and immaterial."

Defendants' answer is: Plaintiff suffered loss from the American Company's method of financing the licensee companies under the license contract through the discrimination which it created in favor of the others whose temporary and permanent financing was done by it on a cheaper basis, although plaintiff was entitled to equal treatment in these respects. This loss is fully discussed in Defendants' [fol. 2358] Brief, pages 346-7 and 425-429, under License Contract Services and Payments. The fact that plaintiff paid and earned 8% dividends under the existing rates was used by the Supreme Court's Opinion as one element in its conclusion as to the adequacy of the revenue derived therefrom. It is material as showing the actual results from income which on plaintiff's contention is confiscatory. This is fully discussed in Defendants' Brief, pages 996-7.

Ex. X-124 and X-125

Plaintiff's objection is: These exhibits are subject to the same objection as Exhibits X-122 and X-123.

Defendants' answer is: They are important for the reasons stated in respect to X-123, and as used in Defendants' Brief, pages 344-5.

Ex. X-126

Plaintiff's objection is: This exhibit is a "comparison absolutely without significance."

Defendants' answer is: The significance is the same as that stated in respect to Exhibit X-123 and as used in Defendants' Brief, page 345.

Ex. X-127, X-134, X-272, X-273, X-274, X-276, X-278, X-280, X-282, X-294 and X-337

Plaintiff's objection is: (1) These exhibits do not show yields or return on fair value but yields on investment in stock.

Defendants' answer is: The purpose of these exhibits is the same as that of Exhibit X-123, as above stated, and as [fol. 2359] used in Defendants' Brief, pages 428, 997, 1008 and 1009.

Plaintiff's objection is: (2) The returns are expressed on the basis of return to stockholders on outstanding stock.

Defendants' answer is: The expression is in conformity with Bell System practice to express the return from the operations as a whole, and permits a direct comparison between the results from particular operations and from all operations of the American Company in the same year, as discussed in Defendants' Brief, pages 60-62 and 86-90.

Ex. X-128

Plaintiff's objection is: The term "profit" is used in the exhibit to denote the amount carried to surplus from the American Company's investments in licensees, and the comparison is meaningless.

Defendants' answer is: Plaintiff's witness admitted that "In Exhibit X-128 and the other exhibits where I talked about 'profits,' it is perfectly clear as to what was meant by the term 'net profits'." In reading the exhibit you would know from reading it that it means "transferred to surplus" (N. R. IV, 1416).

The purpose of the exhibit is discussed in Defendants' Brief, pages 344-5, which shows how the American Com-

pany's investment in licensees became more profitable as a result of its failure to give them the benefit of the lower cost of money during the period 1922 to 1930.

[fol. 2360] Ex. X-129

Plaintiff's objection is the same as in respect to Exhibit X-128.

Defendants' answer thereto in respect to Exhibit X-128 applies equally to plaintiff's objection in respect to X-129.

Ex. X-130

Plaintiff's objection is: The comparison between plaintiff's actual experience and that of the other licensees disregards peculiar conditions in respect to the others such as their insufficient earnings.

Defendants' answer is: The American Company financed itself and all of the licensees on the basis of the average showing, irrespective of the conditions in respect to any particular licensee, in conformity with the cooperative arrangement for pooling the experience of all. The comparison is on the same basis of average experience as discussed in Defendants' Brief, pages 346, 428, 997, 1053, etc.

Ex. X-131 to X-137; X-142 to X-147; X-273, X-274, X-279 to X-282; X-284, X-285, X-296, X-297 and X-298

Plaintiff's objection is: The exhibits use quarterly averages for loans "which are not sufficiently accurate averages for the purpose used."

Defendants' answer is: Plaintiff had the facts but made no showing that quarterly averages were not accurate. Defendants showed that such use in respect to plaintiff's experience gave the same result in several years and varied the result in the period 1923-1930 by less than 3/100 of 1% (N. R. VI, 2032), and for all licensees 1/100 of 1% (N. R. VI, 2035). Plaintiff itself did not use actual interest figures in its computations on the same subject-matter— [fol. 2361] all as shown in Defendants' Brief, page 367.

Ex. X-132

Plaintiff's objection, based on its objection to X-128 and X-129, is answered by Defendants' answer to the objections to those exhibits.

X-132 to X-135; X-137, X-142, X-143, X-273, X-274, X-281, X-282, X-284 and X-285

Plaintiff's objection is: "These exhibits involve commingling of interest and dividends and improper comparison of things that are not comparable; a comparison the basis of which is investment and not return on fair value is of no value."

Defendants' answer is: These exhibits are used in connection with the discrimination against plaintiff by the American Company in its financing of the licensees, as discussed in Defendants' Brief, pages 425-429.

These exhibits are also used to show the contradiction between plaintiff's prognosticated minimum return and its earning record as shown in Defendants' Brief, pages 996-997.

These exhibits are also used to show the contradiction between plaintiff's prognosticated minimum return and the experience of the other licensees, as shown in Defendants' Brief, pages 1008-1009.

Ex. X-130, X-137, X-142 and X-143.

Plaintiff's objection is: These exhibits show the license payment of each of the licensees on the basis of placing each of them in the same relative investment position to [fol. 2362] the American Company as that of plaintiff. "They purport to tie up or relate the license payments of the Illinois Bell and other licensee companies with yields on stocks and loans, the two matters having no connection."

Defendants' answer is: As a necessary implication of the license contract relationship, plaintiff is entitled to have its financing done by the American Company on the basis of not being required to pay therefor to the American Company any more than is currently paid by the other licensees. To charge all licensees for the privilege of participating in a pooling arrangement for financing their entire needs and then to distribute between them the proceeds thereof on terms resulting in discriminatory annual charges is in fact to create unfair preferences between them and to rebate in whole or in part the charge made for the financing service itself, as shown in Defendants' Brief, pages 425-429.

In the license contract exhibits furnished by plaintiff to the defendant and offered at the final hearings, Mr. Heiss included within the license contract costs, losses to the American Company in holding funds for the purchase of stock and for the making of loans and losses to the American Company incurred in connection with loans to the licensee companies. But Mr. Heiss did not show the profit to the American Company while holding the stock, nor did he take into account any inequality as between the licensees as to the per cent of return paid to the American Company for moneys furnished in the form of stock and loans, resulting from the difference in the dividend rate on the stock, or through the difference of the proportion of stock and loan moneys furnished to the licensees companies (N. R. V, 1706, 1707). What Mr. Heiss failed to do the defendants supplied.

[fol. 2363] Ex. X-138 and X-139

Plaintiff's objection is: (1) No apportionment to the Chicago area is shown.

Defendants' answer is: Before arriving at the apportionment it was necessary to get the figures for the Company as a whole, the apportionment in the Chicago area being shown in X-147.

Plaintiff's objection is: (2) X-138 gives no consideration for costs relating to funds held available for Long Lines. This is inconsistent with X-145.

Defendants' answer is: All of the exhibits furnished by plaintiff to the defendants prior to the trial and prepared by Mr. Heiss, and upon which Exhibit X-138 was based, showed the cost of holding funds to meet the cash requirements of the licensee companies distinct from any cost which the American Company might have in holding funds for the Long Lines (D-116). X-138 makes use of these figures.

Ex. X-140

Plaintiff's objection is: (1) "In computing the total costs defendants have deducted one million dollars for 1923 up to two and one-half million dollars in 1930, which are termed 'Estimated amount of corporate expenses attributable to ownership of System securities and related expenses,' which figures are incorrect and without support in the case."

(2) "Furthermore, Mr. Heiss' deductions were intended to cover any non-license expenses which might exist in all classes of costs, whereas this exhibit concentrates that to a certain limited number of expenses."

Defendants' answer is: Defendants used Mr. Heiss' figures, to which he testified in the Ohio case and which plain-[fol. 2364] tiff furnished to the defendants prior to Mr. Heiss' hearing in the instant case, as plaintiff's proposed exhibits. Plaintiff's objection confirms defendants' position in its Brief under the topic "Mr. Heiss' shifting use of facts and figures destroys the probative value of the showings presented by him" as shown in Defendants' Brief, page 362.

Plaintiff's objection is: The allocation of costs are made on the basis of license payment.

Defendants' answer is: Prior to the trial plaintiff refused to make available the data from which other bases of allocation could be developed by defendants (Defendants' Brief, pages 136-8). (It was on this ground defendants objected to the offer by plaintiff of its allocation). (A-100-114.)

Ex. X-141

Plaintiff's objection is: The exhibit is "redundant" as similar information is included in Plaintiff's Exhibit A-170, in supporting exhibit.

Defendants' answer is: Exhibit A-170 covers the period 1923-1931. X-141, prepared by Mr. Heiss, covers the period 1920-1922.

Ex. X-145 and X-149

Plaintiff's objection is: The propriety of the return from license payment is based upon return on investment which basis is wrong.

Defendants' answer is: Plaintiff's Exhibits, A-198 and A-200, as presented by plaintiff, are on the same basis.

Plaintiff's objection is: Physical property should be valued at fair value instead of book cost.

[fol. 2365] Defendants' answer is: The special circumstances in the record require that only book cost should be used, as the evidence of value, as shown in Defendants' Brief, pages 71-75.

Plaintiff's objection is: Either X-149 or X-145 is incorrect as the per cent return from the Long Lines in each of these are not the same.

Defendants' answer is: The per cent return in the two exhibits could not possibly be the same. X-145 is based upon Mr. Heiss' figures, furnished by the plaintiff before the trial and X-149 is based upon Mr. Heiss' figures offered at the trial. Any inconsistency between the two sets of figures arises from Mr. Heiss' shifting use of facts and figures to which defendants have drawn attention in their brief, page 362.

Ex. X-146, X-147, X-150 and X151

Plaintiff's objection is: These exhibits are based upon Exhibits X-145 and X-149.

Defendants' answer is: The same reasons given by defendants in support of Exhibits X-145 and X-149 are applicable in respect to these exhibits based thereon.

Ex. X-148

Plaintiff's objection is: Although the figures are correct the total "Balance Available for Additional Return to American Telephone and Telegraph Company" and likewise the legend at the foot of the exhibit are misleading because certain other allowances which plaintiff claimed in Exhibits A-198 to A-201 should be deducted were not deducted.

Defendants' answer is: The additional allowances which plaintiff claimed in Exhibits A-198 and A-201 are improper [fol. 2366] including (a) additional return for fair rental of instruments in excess of the actual experience of the American Company (Defendants' Brief, pages 63-84); and (b) patent infringement liability cost (Defendants' Brief, pp. 286-318). Cost of Acquiring Rights from General Electric in the Radio field as shown in Defendants' Brief, pages 382, 388.

Ex. X-153

Plaintiff's objection is: There is no relation between the cash payments by plaintiff to the Western Electric with the cash obtained by plaintiff from American Company.

Defendants' answer is: The loans which the American Company made to the licensees, including plaintiff, for construction, were part of the American Company's program to promote sales from the Western Electric pursuant to its promotion arrangement with the Western Electric, as shown in Defendants' Brief, pages 125-126.

Ex. X-192

Plaintiff's objection is: Comptroller's Report, CR-51A, which is X-192, "unnecessarily pads the record."

Defendants' answer is: This exhibit is important as showing the contrast between the actual experience of the American Company in relation to the Bell Operating Companies and Plaintiff's contention that there is a relation between the figures which it represents to be the American Company's experience and an 8% return on its property investment, as discussed in Defendants' Brief, pages 1007-1008.

[fol. 2367] Ex. X-193

Plaintiff's objection is: Comptroller's Report 53, which is X-193, has no value, even to show whether there was a gain or a loss on license contract services.

Defendants' answer is: This exhibit is important as showing (1) the actual experience of the American Company in its investment relation to the licensees on the basis of which it made its investments during the period 1923-1930, in contrast to plaintiff's prognosticated minimum return required to attract capital as discussed in Defendants' Brief, page 1007; and (2) the relative importance of the holding company's operations and the license contract operations to the American Company, in contradiction of Mr. Heiss' testimony that the holding company's operations are negligible, as discussed in Defendants' Brief, pages 333-338.

Ex. X-194 to X-198

Plaintiff's objection is: "The actual experience of the 195 and 205 Broadway Corporations for various years is so remote as to destroy the value of this material even in

determining the reasonableness of the license contract services, or any portion thereof.".

Defendants' answer is: The data contained in these exhibits is important to show (1) the unfairness of Mr. Heiss' inclusion as part of the License Contract costs, the losses to the American Company in holding title to the property, as shown in Defendants' Brief, pages 381-2; and (2) the unfairness of Mr. Heiss' showing as to the fair return which the American Company should be entitled from its investment in the telephone instruments in contrast to the fair return which the American Company actually received [fol. 2368] on its investment from its building operations, as shown in Defendants' Brief, pages 67-68.

Ex. X-202

Plaintiff's objection is: While some of the figures taken from these exhibits are taken by Dr. Jewett in his exhibits, it contains a mass of other material "and it would be an imposition on the court and on the plaintiff to include these reports."

Defendants' answer is: These reports are important as showing the continuity of the operations in respect to the same subject from the Department of Development and Research to the Bell Telephone Laboratories and as showing the magnitude of the various classes of operations, the results of which found application in the Bell and non-Bell fields and in respect to which plaintiff's allocation of Development and Research expense and of Western Electric expense were disregarded, as shown in Defendants' Brief, pages 190, 838.

Ex. X-203 and X-204

Plaintiff's objection is: The expenses of the Bell Telephone Securities Company are remote.

Defendants' answer is: These documents show the small amount of expenses incurred by the Company in contrast to the magnitude of its operations, and show the small amount of reimbursement to the licensees, including plaintiff, for the services rendered by them on behalf of the Bell Telephone Securities Company, as a part of the co-operative plan by which the American Company is benefited, as shown in Defendants' Brief, pages 416-7, 421-2.

[fol. 2369] Ex. X-205 and X-206

Plaintiff's objection is: "They show merely cash transactions which are no guide to actual earnings or to the costs of License Contract services rendered."

Defendants' answer is: The magnitude of the operations of the American Company, other than in servicing the licensees under the license contract, show the unfairness of Mr. Heiss' allocation of holding funds between the license contract operations and the other operations of the American Company, as shown in Defendants' Brief, pages 130-134.

These reports also show the error of plaintiff's contention that the transfer of the telephone instruments to the Long Lines was not considered a sale, as shown in Defendants' Brief, page 39.

Ex. X-207 and X-208

Plaintiff's objection is: These statements, prepared by Mr. Heiss, which divide the total revenues of the American Company between the Long Lines Department, License Contract operations and Holding Company operations, were prepared by him on the basis of his Ohio exhibits and not upon his presentation in the instant case. "There are no inconsistencies between the two but the method is different and the exhibits should be excluded."

Defendants' answer is: There is a glaring inconsistency, as shown in Defendants' Brief under the topic, "Mr. Heiss' shifting use of facts and figures destroys the probative value of the showing presented by him," page 362. These exhibits are also necessary as the basis for defendants' exhibits which were prepared on the facts therein contained, which defendants had a right to assume repre-

[fol. 2370] sented the true facts, as represented by the Comptroller of the American Company.

Ex. X-209 and X-210

Plaintiff's objection is: These are the detailed analysis of figures in Dr. Jewett's Exhibit A-114 and throw no light on the subject.

Defendants' answer is: They show the character of the work of the Engineering Department of the Western Elec-

tric and the essential unity of the operations, part of which are billed to the American Company and part of which is retained by the Western Electric, as discussed in Defendants' Brief, pages 188-212.

Ex. X-211

Plaintiff's objection is: The Balance Sheet of the Bell Telephone Laboratories is "irrelevant, immaterial and incompetent."

Defendants' answer is: These exhibits disclose how the Western Electric made a profit of $2,115,000 on the transfer of the Engineering Department to the Bell Telephone Laboratories, Inc., in 1925, to which profit Defendants contend the Western Electric was not entitled, as shown in Defendants' Brief, page 380.

This exhibit also shows the character of the operations of the Bell Telephone Laboratories in its Bell and non-Bell operations.

Ex. X-212–X-216

Plaintiff's objection is: Although the circulars to the stockholders of the American Company tie up the purchase of stock with the operations of the licensee companies, "a [fol. 2371] very slight connection between such statements and any other statements in these exhibits to the issue of License Contract cost in the Illinois Bell is so small and remote as to render it of no value as evidence."

Defendants' answer is: Plaintiff's presentation has failed to claim the proper credit for the large amount of expenses and amount of costs incurred by plaintiff in carrying out the services called for in these circulars. Defendants claimed, on behalf of plaintiff, such credit, as shown in Defendants' Brief, pages 416-25.

Ex. X-218

Plaintiff's objection is: The receipts and disbursements of the Bell Telephone Laboratories for the years 1925-1930 cannot be tied up with any figures on the cost of rendering the license contract services.

Defendants' answer is: These exhibits show clearly the magnitude and unity of the Bell Telephone Laboratories' operations the expenses of which are divided between the American Company, the Western Electric and the Western

Electric's subsidiaries, as bearing upon the benefits to the non-licensee operations from the functions of the laboratory for which the licensees are charged, as shown in Defendants' Brief, pages 189, 838.

Ex. X-225

Plaintiff's objection is: The amount of funds of plaintiff and all the other companies loaned to the American Company has no bearing upon the issues of the license contract.

Defendants' answer is: This exhibit is important as showing the essential difference of plaintiff's financial [fol. 2372] situation and that of the other licensees, as bearing upon Mr. Heiss' allocation of the costs of financial services of advances, as shown in Defendants' Brief, pages 425-9.

This exhibit is also important as showing the benefit which the plaintiff was to the American Company in supplying it with funds which it could make available to other licensees, as well as to plaintiff, as shown in Defendants' Brief, pages 97-108.

Ex. X-227-X-262 (except X-252-X-256)

Plaintiff's objection is: (1) None of these exhibits is of any value to the Court in determining the issue of confiscations as not one of them takes into consideration the value of the property, the entire earnings of the company or the particular capital structure of the company.

Defendants' answer is: These exhibits are of value to the Court in showing that plaintiff's prognosticated minimum return required to attract capital and to maintain the stability of its securities is contradicted by its own experience and by the experience of the Bell System during the period under investigation, as revealed by (1) the cost of issuing credit obligations, (2) the yield on their original public offering, (3) the yield on their resale, and (4) the yield and record of stability of their stock issues under incomes which were only a fraction of the amount which plaintiff claimed it needed to avoid confiscation, as shown in Defendants' Brief, page 983.

Plaintiff's objection is: (2) X-227, X-228, X-229, X-235, X-236, X-237, X-246 and X-247 "compare things that are

not comparable—namely, they compare the yields on bonds of highest ratings issued by the Bell System with bonds of [fol. 2373] much lower ratings issued by railroads and other public utilities."

Defendants' answer is: Plaintiff's objection conclusively proves that which defendants intended to prove by these exhibits—namely, that Mr. Crunden's presentation at the 1929 hearings as plaintiff's sole evidence on Rate of Return was fatally defective (O. R. II, 869; O. R. IV, 1276) in that he used the yields of all grades of issues of all utilities as the basis for his prognostication of the minimum return required by plaintiff whose securities were of the highest grade as shown in Defendants' Brief, page 988.

Similarly, plaintiff's objection conclusively proves that which defendant intended to prove by these exhibits—namely, that a comparison between plaintiff's required return and that of other companies, which were the subject matter of other cases cited by plaintiff (Plaintiff's Brief, pages 315-16) means nothing without knowing the investment grade of the securities issue, the relative amount of high grade and low grade issues of the same company and the investment experience in respect to the matters revealed by the exhibits to which plaintiff objects.

Ex. X-250 and X-251

Plaintiff's objection is: The exhibits purport to show the comparison between stock and bond yields; there is no basis for the selection; they are valueless on the issue of Rate of Return to attract capital.

Defendants' answer is: The exhibits are material as showing that during the period under investigation, the stocks of companies whose bonds were of the same grade as those of the Bell System and of plaintiff did not sell on [fol. 2374] the basis of investment yield predicated on the "risk of investment" in capital obligations; to that extent the actual financial experience of the period contradicted plaintiff's argument in support of its prognosticated minimum return as shown in Plaintiff's Brief, page 310. Similarly the same experience contradicts plaintiff's assumption in respect to the required cash return to attract equity capital to the American Company, which assumption formed one basis for plaintiff's prognostication of minimum return, as shown in Defendants' Brief, page 1038.

Ex. X-252 and X-253

Plaintiff's objection is: The ratios of capital, surplus and reserves are different for plaintiff, the Commonwealth Edison and Peoples Gas Company; the difference vitiates any conclusions to be drawn from a comparison between them; the comparisons have no value.

Defendants' answer is: The comparison shows the extent to which plaintiff's subscribers, as involuntary investors, have contributed through advance contributions for anticipated depreciation on contemplated future additions, to the capital of plaintiff for the benefit of its capital investors in contrast to the experience of ultilities, with whom Mr. Hoyt, plaintiff's expert on Rate of Return, claimed plaintiff's investment position was comparable, as shown in Plaintiff's Brief, page 313.

The comparison shows one of the reasons why plaintiff's prognosticated required minimum return on property value is contradicted by plaintiff's actual experience in comparison with high grade utilities, to-wit: the large percentage of capital provided by depreciation accumulations through the use by it of the straight line method of computing de-
[fol. 2375] preciation expense charges as shown in Defendants' Brief, page 983, et seq.

Ex. X-254 and X-255

Plaintiff's objection is: These exhibits "are objected to for the same reasons as X-252 and X-253."

Defendants' answer is: These exhibits show that even if plaintiff were to deduct the entire depreciation reserve from the book cost of its property, the rate base would cover plaintiff's credit obligations, capital and surplus, thereby proving defendants' contention in respect to the relation of the depreciation reserve to the original undepreciated book cost of property and the true ground for deducting such amount from the rate base value, whether measured by original cost or reproduction cost new of the property, as shown in Defendants' Brief, page 954 et seq.

Ex. X-256

Plaintiff's objection is: The exhibit is worthless because it fails to take into account the values of the properties of

the various enterprises, the difference in capital structures and in proportion of capital and credit obligations, and because the exhibit weights interest and dividends and not earnings.

Defendants' answer is: The exhibit shows that plaintiff whose credit securities were on as favorable an investment basis as those of the Commonwealth Edison and Peoples Gas Company did not get the benefit thereof as reflected in the cost of equity capital during the period when cost of money became cheaper. The American Company, as the [fol. 2376] sole investor in the equity capital of plaintiff, did not permit it to get the advantages which the two other companies received in attracting equity capital from the public and which the American Company itself received in its relations to its investors, as shown in Defendants' Brief, pages 343-344.

Ex. X-261 and X-262

Plaintiff's objection is similar to that in respect to X-256.

Defendants' answer is: These exhibits, showing the investment experience of the individual companies, summaries of which appear in previous exhibits, enable this Court to see the absurdity of plaintiff's prognostication of a required minimum return by comparison with the experience of other utilities with whom plaintiff and the Bell System compete for capital, as shown in Defendant's Brief, page 986, et seq. The absence of such facts in the previous record enabled plaintiff to impose upon this Court in 1929, in its presentation on Rate of Return based on prognostication (O. R. II, 869; O. R. IV, 1276). Defendants consider these exhibits a valuable contribution to destroy forever the possibility of making presentations such as plaintiff has made herein and which would lead to returns of 14% to 25% on its capital and surplus as minimum returns to avoid confiscation as shown in Defendants' Brief, page 1034.

Ex. X-285

Plaintiff's objection is: This exhibit can have no bearing on the issue of rate of return, and can have no bearing as a basis for comparison in respect to license contract.

[fol. 2377] Defendants' answer is: This exhibit is material as showing the discrimination in the actual experience of the American Company's relationship to plaintiff,

in contrast to the American Company's relationship to other licensees, as shown in Defendant's Brief, pages 428-429.

This exhibit is also material in contrasting the actual experience of the American Company with plaintiff's prognosticated minimum return required to attract capital, as shown in Defendant's Brief, page 996.

Ex. X-286

Plaintiff's objection is: This exhibit shows a percentage of total earnings related to stock, which is not an issue in this case.

Defendants' answer is: The facts contained in this exhibit are material in showing the unreasonable earnings which the American Company would receive from its investment in telephone instruments under the claim of fair return made by it in Mr. Heiss' exhibits, as shown in Defendants' Brief, page 81; also as showing the unreasonable return which the American Company would receive from a rental equal to the amount of $709,000 shown by plaintiff as the required amount to maintain its own instruments in 1923, as shown in Defendants' Brief, page 84.

This exhibit is material as showing the unreasonable return which the American Company was making on its investment in the Long Lines Division of its business, in comparison with its return on investment in its entire operations during the period under investigation, and as bearing upon the improper allocation made by plaintiff of the De-[fol. 2378] velopment and Research Department cost, as shown in Defendants' Brief, pages 274-82.

This Exhibit is material as showing the picture of the American Company's entire operations and the separate operations, as bearing upon the contradiction between the American Company's actual experience and plaintiff's contention of a prognosticated minimum return to attract capital, as shown in Defendants' Brief, page 1010, et seq.

Ex. X-287.

Plaintiff's objection is: Per cent return on funds does not show the return on assets, and even if it did, it would not be material in determining rate of return.

Defendants' answer is: This exhibit furnishes the data by which comparison may be made of the relative profit-

ableness to the American Company from particular transactions in comparison to that of its entire operations, as shown in Defendants' Brief, pages 81, 84, 247 and 1076. X-287 is used as a basis for X-298, which is used in Defendants' Brief, pages 81, 84, 247 and 1076.

Ex. X-290

Plaintiff's objection is: The return per dollar of investment on capital and surplus, after deducting interest, is immaterial; in any event the value of the property should be taken into account.

Defendants' answer is: Because of the special facts in the record, on the basis on which Mr. Heiss made use of the cost of funds, the American Company has made possible one basis of comparison as to the relative profitableness [fol. 2379] of particular operations—a comparison on the basis of a return per dollar of investment on capital stock, as shown in Defendants' Brief, pages 55-58, 86-90, 247.

Ex. X-291

Plaintiff's objection is: The rate of return upon so-called holding company activities is immaterial and that the return should be expressed on the entire investment instead of capital stock.

Defendants' answer is: For the same reasons as stated above under X-287, the comparison made on the basis of return on the equity investment of the stockholders of the American Company is proper. X-291 is the basis for X-298, which is used in Defendants' Brief, pages 81, 84, 247 and 1076.

Ex. X-292

Plaintiff's objection is the same as to X-287.

Defendants' answer is the same as that given in connection with X-287. Mr. Heiss' exhibits, which include cost of funds as part of the costs, necessarily relate the earnings from the license contract operations to investment.

Ex. X-293, X-294 and X-295

Plaintiff's objection is: The comparisons are based upon the book investment of the American Company and not on the capital and surplus of the Western Electric.

Defendants' answer is: X-295 (P. 19) is based upon the capital and surplus of the Western Electric, such exhibit being entitled "Earnings available for common stock re-
[fol. 2380] lated to capital and surplus based on averages per share."

X-293 and X-294 did not take into account the surplus of the Western Electric because these exhibits are the basis for X-298 which shows the return on the holding company operations of the American Company. Defendants' treatment of American Company's investment in Western Electric is identical to that used by plaintiff in Exhibit A-260, which treatment was justified by plaintiff simply "because it seems to be a custom of the company (American Company) to treat that as an investment and not as a telephone operating property" (N. R. IV, 1365-6).

[fol. 2381] Defendants related the Western Electric's earnings to the capital and surplus of the Western Electric when they considered the American Company's relationship to that company in respect to the promotion arrangement for the sale of apparatus to the Bell System as shown in Defendant's Brief, pages 126 and 284.

Ex. X-296, X-297 and X-298

Plaintiff's objection is: The value of the property is the only basis upon which a comparison can be made.

Defendants' answer is: The special circumstances in the record, based upon the method used by Mr. Heiss in figuring cost of funds used in the business, established a standard of comparison on the basis used in these three exhibits, as shown in Defendants' Brief on pages 81, 84, 247 and 1076.

Plaintiff's objection is: The allocations in X-298 are based upon the same infirmities as pointed out in plaintiff's objection to X-145. Plaintiff's objection is answered by defendants in their answer under X-145.

Ex. X-299 and X-300

Plaintiff's objection is: These exhibits are based upon book figures instead of value.

Defendants' answer is: (1) plaintiff itself used book figures as a basis of comparison in its Exhibit A-268, entitled "Illinois Bell Telephone Co.—Comparison of rates of return for Chicago Area with all associated operating com-

panies, including Long Lines"; (2) the special circumstances in the record require that the value of the property shall not be in excess of the book value, as shown in Defendants' Brief, pages 71-75; and (3) on the basis of plain-
[fol. 2382] tiff's presentation of the Western Electric Profits and Prices the properties shown in the fixed plant accounts of each of the licensees, as appears on the books, would bear the same ratio to the reproduction cost new of such properties as do those of every other licensee. The book value, therefore, forms a proper basis of comparison under the standard of the Bluefield Case, taking into account the unique features of Bell System operations as shown in Defendants' Brief, pages 984, 986, 998 and 1035.

Ex. X-301

Plaintiff's objection is: The return earned by the Long Lines is irrelevant, particularly when it is based on book figures less depreciation reserve rather than on fair value.

Defendants' answer is: Plaintiff itself used book figures in A-268 and included the rate of return earned by the Long Lines. Moreover the return by the Long Lines is relevant in connection with the issues of Development and Research and in connection with Separation and Revenue, as shown in Defendants' Brief, pages 244 and 245.

Ex. X-302

Plaintiff's objection is: (1) the comparison of return on the basis of all licensees and of plaintiff is of no value; (2) the comparison is on the basis of book figures and not fair value; and (3) the accrued depreciation is deducted in the amount shown in the reserve.

Defendants' answer is: Plaintiff's Exhibit A-260 made the comparison on the basis of book value and made com-
[fol. 2383] parison between plaintiff and all licensees, including Long Lines. Defendants' position is that the special circumstances in the record require that the entire amount of depreciation reserve should be deducted in any comparison, as shown in Defendants' Brief, pages 246 and 75-78.

Ex. X-303 and X-304

Plaintiff's objection is the same as the objection made in connection with X-302.

Defendants' answer is the same as in connection with X-302. The purport of plaintiff's objection is that the comparison of the results of X-302 with the percentage of return, as shown in the MR and CR Reports, is meaningless. Before the hearings plaintiff refused to make available the data in its possession from which the defendants could compute the per cent return on fixed capital of the associated companies. Because of such refusal defendants were compelled to make such computations from the reports of the Interstate Commerce Commission. When plaintiff finally made available the data in its possession covering the same subject matter, defendants, to check the accuracy of their computations taken from the Interstate Commerce reports, as shown in X-302, made the comparison with the data contained in the MR and CR Reports to show that defendants' results in X-302 were accurate.

Ex. X-308

Plaintiff's objection is: That it is irrelevant, incompetent and immaterial.

Defendants' answer is: Plaintiff, by the use of the Interstate Commerce Commission Reports, sought to show that [fol. 2384] defendants could have derived therefrom more accurate results than from the quarterly balances furnished by plaintiff to defendants in respect to loans (N. R. VI, 1777-9). Examination of the Reports shows that they have no relation to the facts in respect to which plaintiff produced them (N. R. VI, 1804-12) as shown in Defendants' Brief, page 367.

Ex. X-328-340

Plaintiff's objection is: The witness who presented these exhibits used an expression "I do not know what they mean."

Defendants' answer is: The witness testified "it is a fact that in all of these exhibits that I have put in today, I have made them up especially as directed by counsel" (N. R. VI, 2042). The witness is an accountant who is responsible for the mathematical correctness of the figures therein stated. The exhibits on their face show what they intend to represent. Counsel and not the witness are responsible for the purpose of the exhibits, and the meaning

they import into the cause. Their very important meaning in the cause is shown in Defendants' Brief, pages 1032, 1033, 1034, 1050, 1088, 1089.

Ex. X-328

Plaintiff's objection is: The exhibit used as a base book cost less reserve for depreciation, excluding cash working capital.

Defendants' answer is: Plaintiff's Exhibit A-260 used book cost. Defendants' position is that the entire amount of depreciation reserve should be deducted and cash working capital is excluded from each one, and, therefore, could not affect the comparative result. It is significant that [fol. 2385] Plaintiff's Exhibit A-260 does not include cash working capital. X-328 is used as a basis for X-330, which is used in Defendants' Brief, pages 1050, 1088 and 1089.

Ex. X-329–X-332 and X-334

Plaintiff's objection is: These exhibits are subject to the same infirmities as X-328.

Defendants' answer is: The same as that given for X-328.

Plaintiff's objection is: For the year 1928 the adjustment is for three months instead of on an annual basis.

Defendants' answer is: The purpose of the exhibit is to show the actual experience subject to adjustments, and the actual experience for the first nine months would in any event be on the basis of existing rates.

Ex. X-329

Plaintiff's objection is: X-329 assumes the correctness of the Straight Line method of depreciation accounting for the associated companies but rejected it for the Illinois Bell.

Defendants' answer is: They do not reject the Straight Line method of accounting depreciation.

Ex. X-333

Plaintiff's objection is the same as its objection to X-328 and X-332.

Defendants' answer in respect to those exhibits applies equally to this exhibit.

[fol. 2386] Ex. X-334

Plaintiff's objection is the same as its objection to X-328, and is subject to the same answer. See Defendants' Brief, pages 1050, 1088 and 1089.

Ex. X-335

Plaintiff's objection is: Cost of funds is no indication of what it would cost plaintiff to obtain money in the open market.

Defendants' answer is: Plaintiff's objection proves Defendants' position against plaintiff's making use of the American Company's cost of funds as the basis for its rate of return, as shown in Defendants' Brief, on pages 1016-1041. Defendants did not commit plaintiff's error of using cost of funds as a basis for rate of return. It is merely used as a short cut in computations to determine the percentages from varying rates of return in Exhibits X-336 and X-337.

Ex. X-336 and X-337

Plaintiff's objection is: Theoretically the rate of return would decrease as the ratio of capital investment to value of property decreased.

Defendants' answer is: Whatever may be possible theoretically the fact is that we have in the record actual experience showing the ratio of capitalization to property value, and it is on the basis of known facts that the comparison is made. In this connection it is significant that the American Company in its reports, and plaintiff in its reports to the American Company, make use of the same basis for showing of return as that used by defendants in [fol. 2387] X-336 and X-337, as appears from Defendants' Brief, pages 87, 88, 1032, 1033 and 1034.

Ex. X-338

Plaintiff's objection is: The exhibit is based on book cost of plant less depreciation reserve instead of fair value.

Defendants' answer is: Plaintiff used book cost in A-260 as a basis of comparison.

Defendants' position is that only book cost less depreciation reserve can be used under the special circumstances in the record, as shown in Defendants' Brief, page 859.

Ex. X-339

Plaintiff's objection is the same as its objection to X-338, plus the fact that the depreciation reserve is raised to the level of the reproduction cost.

Defendants' answer is the same as that given in connection with X-338, plus the fact that where the book cost is raised to reproduction cost, the depreciation reserve should be raised to correspond, as shown in Defendants' Brief, pages 958-9.

Ex. X-340

Plaintiff's objection is: That the Rate of Return includes adjustments which in plaintiff's opinion are wrong.

Defendants' answer is: That this exhibit gives effect to the adjustments which on defendants' theory of the case should be made.

[fol. 2388] Ex. X-346

Plaintiff's objection is: The Public Utilities Commission's Order of November 29, 1919, has no probative value.

Defendants' answer is: It is a link in the history which contradicts plaintiff's version of the intent to have the Chicago Exchange rates cover the interstate and intrastate uses of its Chicago Exchange plant facilities, as shown in Defendants' Brief, page 704.

Ex. X-355

Plaintiff's objection is: The provisional estimates are estimates and prophecies by officers of companies not parties to the litigation, and unless they are called the evidence is inadmissible.

Defendants' answer is: Plaintiff's presentation on Cost of Holding Funds, under License Contract Services and Payments, divided such cost between plaintiff and the other licensees on the basis that their provisional estimate requirements were all pooled and met by the American Company. X-355, relating to the other licensees, and X-354, relating to plaintiff, show that the American Company's experience in meeting the requirements of the other licensees is of an entirely different character than its experience in respect to plaintiff, which showing vitiates plaintiff's

allocation of any part of the cost to plaintiff, as shown in Defendants' Brief, pages 425-429.

Plaintiff's presentation on Depreciation Expense attaches probative value to the depreciation rates of the other licensees in relation to plaintiff's rates. Exhibit X-355 reveals the lack of comparability, as shown in Defendants' Brief, pages 626 to 630.

[fol. 2389] Ex. X-373

Plaintiff's objection is: The Outside Engineering Manual contradicts nothing that is claimed by plaintiff.

Defendants' answer is: This Manual shows that the basis on which plaintiff computes advance contributions for anticipated depreciation on contemplated future additions in its depreciation expense computations before this Court is contrary to the basis which it uses in making its investments therein, as shown in Defendants' Brief, page 557. This Manual shows that plaintiff's depreciation expense witness had access to, and did not use, the facts of the earning power of the advance contributions in his presentation before this Court, as shown in Defendants' Brief, pages 552-3. This Manual shows the importance which the Bell System places in the "estimates and prophecies" contained in the provisional estimates and to that extent contradicts the position of plaintiff in respect to them before this Court, as shown in its objection to X-357 and in its refusal to make them available to plaintiff until too late for practical use, as shown in Defendants' Brief, page 137.

Ex. X-396

Plaintiff's objection is: The two special license contracts of 1880, which alone contain provisions similar to Section 10 of plaintiff's Original License Contract of 1881, were not in force during the period 1923 to 1931, are too remote and have no probative value.

Defendants' answer is: They are links in the history of rate-making in the Bell System, which proves conclusively that plaintiff's presentation on which it justified its separation of revenues was based on an imaginary and not on an actual history, as shown in Defendants' Brief, page 659, et seq.

[fol. 2390] Ex. X-401

Plaintiff's objection is: The papers relating to the Central Union purchase were offered and excluded at the previous trial and have no probative value.

Defendants' answer is: The Supreme Court found plaintiff was part of an organization "to which the benefits of its operations accrue."

Plaintiff's objection proves its disregard of its own right to claim proper credit for "the benefits of its operations," in so far as they relate to the use of plaintiff's credit to finance the Central Union properties in order to liquidate for the American Company its frozen investment in the Central Union and to relieve the American Company from the necessity of financing the Central Union after 1923, which financing for many years prior to 1923 the American Company was required to do, as shown in Defendants' Brief, pages 409-415.

Ex. X-402

Plaintiff's objection is: The correspondence pads the record.

Defendants' answer is: They characterize plaintiff's conduct in hampering defendants' getting information and show the effort of defendants to get the facts, which have not been made available, as shown in Defendants' Brief, pages 137-138.

Ex. X-403

Plaintiff's objection is: Too remote.

Defendant's answer is: These reports contain the data showing the actual experience of the American Company and of plaintiff, which data was in the possession of the [fol. 2391] American Company but which plaintiff refused to make available to defendants or which they made available to the defendants at a time when it was impossible for defendants to make use of same.

Ex. X-420

Plaintiff's objection is: "Ex. X-420 consists of 293 pages of various minutes of the Executive Committee of the American Company and of agreements executed pursuant thereto. No part or portion of any of these papers has been

pointed out by defendants as bearing upon any issue in this case but they have merely been offered en masse. Such procedure is objected to and the receipt of the papers in evidence is objected to on the ground that they are irrelevant, immaterial and incompetent and if admitted would unreasonably pad the record."

Defendants' answer is: Plaintiff's objection really is that the material is too revealing to remain in the record, as appears from the following vital evidence shown in Defendants' Brief:

(1) The authorization to sell telephone instruments on a basis different than that testified to by Mr. Heiss as shown in Defendants' Brief, pages 23-24;

(2) Character of "advances" authorized for the Bell System as a whole and for plaintiff, as shown in Defendants' Brief, pages 97, 98, 100, 101, 102, 103, 105, 106, 107, 108, 114 and 120;

(3) Agreement with the DeForest Radio Company covering the use of the American Company's patents which plaintiff failed to take into account in Development and Research allocations, as shown in Defendants' Brief, page 170;

[fol. 2392] (4) Arrangement with International Western Electric in respect to the use of the American Company's patents which plaintiff failed to take into account in Development and Research allocations and which Plaintiff's Brief failed to mention, as shown in Defendants' Brief, page 192;

(5) Grant by the American Company to the International Standard Electric Co., of a license to the foreign rights of the inventions of the American Company, to which the plaintiff failed to give effect in its Development and Research allocations and which Plaintiff's Brief failed to mention as shown in Defendants' Brief, page 196;

(6) Grant by the American Company in 1925 and in 1927 to the Automatic Electric of the use of the American Company's inventions which plaintiff failed to take into account and which Plaintiff's Brief failed to mention, as shown in Defendants' Brief, pages 199, 200 and 201;

(7) The real facts surrounding the sale of the Graybar stock in 1928, as shown in Defendants' Brief, pages 205, 206 and 207;

(8) The facts showing the conclusion reached by the American Company prior to 1923 in respect to the potential field for the development of radio which is contrary to plaintiff's basis of allocating the radio expenses incurred by the American Company, as shown in Defendants' Brief, pages 224, 225, 229, 230, 232, 233 and 234;

(9) The facts regarding the use of the American Company's inventions in teletype service which plaintiff failed to take into account in its Development and Research allocations, as shown in Defendants' Brief, pages 256-7;

(10) The facts regarding the use of the reserve for contingencies subsequent to 1923 for purposes other than [fol. 2393] patent infringement liability in contradiction of Mr. Heiss' testimony in respect thereto, as shown in Defendants' Brief, pages 290, 295;

(11) The facts regarding relationship between the American Company and Kellogg Switchboard & Supply Co. and Stromberg-Carlson Mfg. Co. in respect to the use of the American Company's inventions, as shown in Defendants' Brief, page 300;

(12) The facts in respect to the rebate by the American Company of more than the entire amount of the license payments made by the Indiana Bell during the entire period under investigation through cancellation of interest and principal indebtedness due from that licensee to the American Company, as shown in Defendants' Brief, page 413.

The effort of plaintiff to keep out these minutes and the discussion in respect thereto appear in Defendants' Brief, page 201.

Ex. X-424

Plaintiff's objection is: The 100-mile contract is too remote and has no probative value.

Defendants' answer is: It is one link in the plaintiff's history of rate-making, which disproves plaintiff's presentation of an imaginary history to justify its separation of exchange revenues, as shown in Defendants' Brief, pages 659, et seq.

Ex. X-435

Plaintiff's objection is the same as X-403.
Defendants' answer is the same as the answer to X-403.

[fol. 2394] Part II

DEFENDANTS' ANSWERS TO PLAINTIFF'S OBJECTIONS TO DEPOSITION EXHIBITS—Filed December 10, 1932

Ex. 1

Plaintiff's objection: Too remote.
Defendant's answer: This article presents the picture of Bell System operations during the period under investigation, which is contrary to the picture which plaintiff presented through Mr. Heiss in allocating license contract costs, as shown in Defendants' Brief, page 221, et seq.

Ex. 2

Plaintiff's objection: The facts in respect to the scope of the work of the Research Laboratories of more than 1500 manufactures is too remote.
Defendants' answer: These facts prove that the American Company, by the 1919 Revision of the License Contract, took over part of the functions of the Western Electric which other manufacturers retain as part of their operations. The significance of charging manufacturing costs as part of the License Contract is discussed in Defendants' Brief, page 274, et seq.

Ex. 7

Plaintiff's objection: The page showing distribution of Treasury Department expenses by "one VanCise" was not vouched for and is "without foundation."
Defendants' answer: The "one VanCise" was the Assistant Treasurer who prepared this for the Treasurer, who testified in respect thereto and produced the paper, pur-
[fol. 2395] suant to Mr. Heiss' direction. The paper shows how Mr. Heiss shifted into the License Contract services cost the costs which the Treasury Department stated to him were non-license contract costs, as shown in Defendant-' Brief, page 328, et seq.

Ex. 8

Plaintiff's objection: These exhibits deal with the Treasury Department's work and are too remote.

Defendants' answer: They show the extent of the assistance given by plaintiff and the other licensees to the American Company in the sale of its stock. Plaintiff failed to claim credit therefor. Defendants claimed credit on its behalf as shown in Defendants' Brief, page 416, et seq. They also show the extent of the Holding Company operations of the American Company, the costs of which Mr. Heiss included as part of the License Contract costs, as shown in Defendants' Brief, page 339, et seq.

Ex. 13

Plaintiff's objection: Too remote.

Defendants' answer: This gives the picture of the radio broadcasting operations of the Long Lines which plaintiff failed to take into account in its Development and Research allocations, as shown in Defendants' Brief, pages 236, 239.

Ex. 14

Plaintiff's objection: Too remote.

Defendants' answer: This shows the magnitude of the telegraphic service which plaintiff failed to take into ac- [fol. 2396] count in connection with its Development and Research allocations, as shown in Defendants' Brief, pages 254-259.

Ex. 15

Plaintiff's objection: Too remote.

Defendants' answer: Same answer as given in connection with Ex. 14.

Ex. 16

Plaintiff's objection: Too remote.

Defendants' answer: Same answer as given in connection with Ex. 14.

Ex. 17

Plaintiff's objection: Too remote.

Defendants' answer: This shows the manner in which the Long Lines Department accounts for the gross revenues, particularly in respect to its special contract serv-

ices which plaintiff failed to take into account in its Development and Research allocations, as shown in Defendants' Brief, page 213, et seq.

Ex. 18

Plaintiff's objection: Too remote.

Defendants' answer: This shows that the Development and Research work covering "Carrier Systems," most of which was charged to plaintiff and the other licensees, has no application to the kind of territory in which plaintiff is operating in Chicago, and shows the importance of the work to the Long Lines, contrary to plaintiff's allocations, as [fol. 2397] shown in Defendants' Brief page 262.

Ex. 21, 22, 23, 37, 38 and 39

Plaintiff's objection: Too remote.

Defendants' answer: These articles give the facts of the regular operations of the American Company in respect to the manner in which it makes its investments, the manner in which the Western Electric manufactures are planned and the manner in which the operations are carried on, which are contrary to the representations which plaintiff made in respect to the same subject matters, as shown in Defendants' Brief, page 148, et seq.

Ex. 19

Plaintiff's objection: Too remote.

Defendants' answer: This states the facts of the regular operations of the American Company, which indicates the importance of the Development and Research work during the period under investigation to the Long Lines, as shown in Defendants' Brief, pages 213, et seq. 274.

Ex. 20, 25, 27, 29, 35, 36 and 188

Plaintiff's objection: Too remote.

Defendants' answer: These articles show the operations of the American Company in the Bell System as an integral organization, contrary to the basis upon which plaintiff has treated it, as discussed in Defendants' Brief, pages 433-436.

[fol. 2398] Ex. 24

Plaintiff's objection: Too remote.

Defendants' answer: This shows the magnitude of operations of the Long Lines for which plaintiff failed to give proper credit, as discussed in Defendants' Brief, page 213, et seq.

Ex. 28

Plaintiff's objection: Too remote.

Defendants' answer: This shows the basis upon which the American Company's capital is attracted to the licensees in the regular course of business and is contrary to plaintiff's prognostications as to what would be required, as shown in Defendants' Brief, page 1010, et seq.

Ex. 30

Plaintiff's objection: Too remote.

Defendants' answer: This shows the extent of the operations of the Western Electric resulting from the benefits of the Development and Research work of the American Company for which plaintiff has failed to give proper credit, as discussed in Defendants' Brief, pages 170, et seq. 242.

Ex. 31

Plaintiff's objection: Too remote.

Defendants' answer: This shows what the American Company, in the regular course of its business, considered the potential field for radio development and is contrary to [fol. 2399] plaintiff's allocations, as discussed in Defendants' Brief, page 222, et seq.

Ex. 33

Plaintiff's objection: Too remote.

Defendants' answer: This shows the relationship of the Electrical Research Products, Inc., to the Bell Telephone Laboratories, which received the benefit of the American Company's Development and Research work.

Ex. 34

Plaintiff's objection: Too remote.

Defendants' answer: Same as answer in connection with Exhibit 28. This article contradicts Mr. Heiss' testimony as shown in Defendants' Brief, page 378.

Ex. 40-48, 50, 50A and 50B

Plaintiff's objection: Too remote.

Defendants' answer: These are all relevant as giving the facts of the operations of the American Company contrary to plaintiff's representations as to the nature of its activities during the period under investigation. They merely continue City's Exhibit 90 and the Annual Reports were quoted by the Supreme Court in its Opinion.

Ex. 79, 80-103 and 122-133½

Plaintiff's objection: Too remote.

Defendants' answer: These forms are important as showing the financial data upon which the American Company bases its capital investments—the information which the [fol. 2400] American Company had in its possession and which plaintiff sought to obtain, but which was refused to defendants either entirely or until such late date that it was impossible to make use of same—as discussed in Defendants' Brief, pages 137-138.

Ex. 110-119.

Plaintiff's objection: Too remote.

Defendants' answer: These show the picture of the American Company's operations as well as that of plaintiff, upon which the capital is attracted, and shows the facts contrary to the testimony of Mr. Heiss, as shown in Defendants' Brief, pages 291-295.

Ex. 120-121

Plaintiff's objection: Too remote.

Defendants' answer: These show the stability of the American Company's outstanding securities under Rate of Return, which is much below the prognosticated minimum return which plaintiff claims is necessary to attract capital, as discussed in Defendants' Brief, page 1010, et seq.

Ex. 146-181

Plaintiff's objection: Too remote.

Defendants' answer: These contain the data in the regular course of business of the Long Lines, which indicate the extent of its operations, which plaintiff failed to give effect

to in its Development and Research allocations, as discussed in Defendants' Brief, page 213, et seq.

[fol. 2401] Ex. 191

Plaintiff's objection: Too remote.

Defendants' answer: The statement of facts contained therein contradicts plaintiff's basis of allocation in connection with its Development and Research work, as shown in Defendants' Brief, page 222, et seq.

Ex. 192

Plaintiff's objection: Too remote.

Defendants' answer: These documents show that the American Company, in the regular course of its business, did not consider the license contract to cover the services which plaintiff claimed were covered by it, as shown in Defendants' Brief, pages 148-160, 170-190.

[fol. 2402] Part III

Defendants' Answers to Plaintiff's Objections to Exhibits Offered by Defendants in the Hearings Before Judge Wilkerson, Made in the Record

Ex. 99, X-294 and X-295 (N. R. VI, 2020)

Plaintiff's objection is: They include $45,000,000 dividends earned by Western Electric from 1882 to 1927.

Defendants' answer is: The $45,000,000 dividends do not represent the non-Bell profits but represent profits in which the Associated Companies are entitled to participate, as shown in Defendants' Brief, pages 193 and 197.

Ex. X-84, X-85, X-87 and X-88 (N. R. VI, 1920, 2020)

Plaintiff's objection is: They eliminate $12,000,000 good will of Teletype Corporation for which Western Electric paid cash; also they include the entire profit of the International Western Electric.

Defendants' answer is: Western Electric did not pay $12,000,000 cash for the good will of Teletype. Western Electric did not purchase any stock from the Teletype Corporation. Western Electric bought from the American

Company for $30,000,000 stock for which the American Company paid $15,000,000 of its own stock. The American Company w[redacted]improperly cashing in on the future profits of Telety[redacted]tent of $15,000,000, as shown in Defendants' [redacted]259. The entire profit of the International W[redacted]ric was properly included, as shown in Defenda[redacted]ages 196 and 197.

[fol. 2403] Ex. [redacted]X-55, X-57, X-58, X-60, X-61, X-63 and X-64 (N. R. VI, 2021)

Plaintiff's objection is: They eliminate too much excess cash and do not give effect to sufficient interest.

Defendants' answer is: The deduction of excess cash and interest was proper, as shown in Defendants' Brief, pages 748, 749 and 768.

Ex. X-50, X-53 to X-58 (N. R. VI, 2021)

Plaintiff's objection is: These exhibits contain an erroneous apportionment of Western Electric Pension Fund.

Defendants' answer is: The apportionment was properly made, as shown in Defendants' Brief, pages 754-5.

Ex. X-317, X-317A, X-318 and X-319 (N. R. VI, 2021-2)

Plaintiff's objection is: They are not probative, are based on unit sales and on provisional estimates and do not show profits.

Defendants' answer is: In so far as the objection other than that they are based on provisional estimates is concerned, defendants' answer to X-313, X-313A and X-314 applies; in so far as they are based upon provisional estimates, they form the basis upon which the Western Electric engineers its production and the basis which enters into its standard cost, is shown in Defendants' Brief, page 826.

Ex. X-67, X-69, X-72, X-81 and X-82 (N. R. VI, 2022)

Plaintiff's objection is: They are based upon stock. As to X-67, it includes profit on the sale of International West-
[fol. 2404] ern Electric; and as to X-69, it includes dividends from the Western Electric Company of London.

Defendants' answer is: The showings in these exhibits are proper as they conform to the practice of the Bell System and are based upon known facts, as shown in Defendants' Brief, pages 86, 87 and 88.

Ex. X-313, X-313A and X-314 (N. R. VI, 2023)

Plaintiff's objection is: They deal with items only and not with dollar purchases and give no information on profits of sale.

Defendants' answer is: The purpose for which these exhibits are used is to determine a representative distribution of variations of labor, material and overhead between actual and standard cost of production. The bases upon which these exhibits are computed are proper, as shown in Defendants' Brief, pages 825, et seq.

Ex. X-347, X-429, X-430 and X-431 (N. R. VI, 2054, 2055, 2058)

Plaintiff's objection is: No probative value.

Defendants' answer is: These are links in the plaintiff's history of rate-making, which disprove plaintiff's presentation of an imaginary history to justify its separation of exchange revenues, as shown in Defendants' Brief, pages 659, et seq.

Ex. X-425 (N. R. VI, 2059)

Plaintiff's objection is: Irrelevant.

Defendants' answer is: This exhibit characterizes the sheets which plaintiff offered from other jurisdictions as bearing upon interstate separation and shows that they can [fol. 2405] have no bearing upon the issues involved, as shown in Defendants' Brief, pages 657-8.

Ex. D-92 (N. R. VI, 2059)

Plaintiff's objection is: Irrelevant.

Defendants' answer is: Plaintiff's President's description of the relation of the American Company and of plaintiff to its investors is contrary to the basis upon which plaintiff made its presentation of Rate of Return and the basis upon which it treated its license contract allocations, as shown in Defendants' Brief, pages 89, 974 and 975.

Ex. X-436 (N. R. VI, 1426)

Plaintiff's objection is: This is a petition before the Commerce Commission.

Defendants' answer is: This exhibit is a summary sheet of Mr. Turner's restudy of Depreciation, and, of course, is relevant, as it discloses the basis upon which it was made.

[fols. 2406 & 2407] In United States District Court

[Title omitted]

Plaintiff's Amended Requests for Findings*

Plaintiff requests the court to make the following finding of facts:

Property Valuation and Separation

1. All of the property in plaintiff's Chicago area, the reproduction cost, book cost, and the fair value of which are found hereunder for the several years involved in this suit, [fol. 2408] was property exclusively used and useful in rendering its telephone service to the public in Chicago (N. R. I, 187).

All of the revenues and expenses of plaintiff, the amounts of which are found hereunder for the several years involved in this suit, were revenues and expenses arising exclusively from the telephone service rendered by plaintiff to the public in Chicago.

2. The reproduction cost new as of December 31 for each of the years 1923 to 1931 of plaintiff's property in service in the said Chicago area (exclusive of working cash capital, materials and supplies, construction work in progress and going value) was as follows (Exhibits A2 to A10, 12, 14 and 41):

1923	$148,581,042
1924	156,452,212
1925	172,257,055

* Requests 25 and 51 are amended. Otherwise there is no change from plaintiff's original requests.

1926	178,413,771
1927	191,820,622
1928	202,604,906
1929	219,327,112
1930	228,411,330
1931	226,912,713

There is included in the reproduction costs above set out for each of the years, the market value of plaintiff's real estate (land) as of December 31, which was as follows (Exhibits A18, A2 to A10):

1923	$2,017,821
1924	2,210,466
1925	2,501,741
1926	2,581,066
1927	3,256,350
1928	3,241,475
1929	3,497,427
1930	3,497,427
1931	3,124,530

[fol. 2409] 3. The actual existing depreciation from all causes in plaintiff's said property was determined by a thorough and careful inspection of the property made by qualified witnesses.

The weighted total or overall condition of the said property was 91 per cent (or 9 per cent depreciation from condition new) for each of the years 1923-1928 inclusive, and 92 per cent (or 8 per cent depreciation from condition new) for the subsequent years.

The depreciation from all causes in the said property on the basis of its reproduction cost as set out in Finding 2 hereof was, as of December 31 for each of the years 1923 to 1931, as follows (Exhibit A22; N. R. I, 73):

1923	$12,553,160
1924	13,043,089
1925	14,177,776
1926	14,686,228
1927	15,697,178
1928	16,487,821
1929	17,001,087
1930	17,703,975
1931	17,607,716

4. The book cost of the plaintiff's said Chicago area property (exclusive of working cash capital, materials and supplies, construction work in progress, and going value) as of December 31 for each of the years 1923 to 1931 was as follows (Exhibit A54, line 12):

1923	$100,040,051
1924	110,987,626
1925	126,493,467
1926	140,915,840
1927	155,508,437
1928	169,390,828
1929	182,657,561
1930	191,286,165
1931	195,422,113

[fol. 2410] 5. Plaintiff reasonably and necessarily employed, in rendering telephone service to the public in the Chicago area in each of the years 1923 to 1931, the following average amounts of working cash capital (Exhibit A54; N. R. I, 251):

1923	$3,000,000
1924	3,150,000
1925	3,325,000
1926	3,550,000
1927	3,825,000
1928	4,050,000
1929	4,500,000
1930	4,550,000
1931	4,250,000

6. The average investment of plaintiff in its Chicago area in materials and supplies necessary in the conduct of its telephone business in each of the following years was (Exhibit A54; N. R. I, 329):

1923	$233,022
1924	299,310
1925	358,227
1926	336,693
1927	326,599
1928	344,336
1929	276,091
1930	209,784
1931	224,433

7. Plaintiff had invested in each of the years 1923 to 1931 substantial sums of money in telephone property in process of construction. This property is similar to plaintiff's telephone property already in operation, but the investment therein is not included in plaintiff's regular plant accounts until construction is completed. The amount of such construction work in progress is not included in Find- [fol. 2411] ings 2 and 4 hereof, and was as of December 31 for each of the years as follows (Exhibit A54; N. R. 1, 228):

1923	$812,543
1924	2,100,245
1925	1,390,296
1926	775,279
1927	5,437,059
1928	3,275,756
1929	1,974,688
1930	4,415,765
1931	441,956

8. Plaintiff's said Chicago property is well planned, efficiently engineered and properly constructed. It has a capable staff of operating employees. It is well adapted to the needs of the City of Chicago and through years of operation has become fully efficient and serviceable to that community. Continuously from 1923 to the present time it has had established routines, attached customers and trained employees. The plant has been efficiently and economically operated and has had a high standard of maintenance. The Company's credit has been excellent and if given reasonable rates it has good earning power. The number of its telephone stations increased from 690,000 at the end of 1923 to over 980,000 at the end of 1930. Plaintiff has engineered and planned its property so that as additions are required to meet the future needs of the community they may be made efficiently and economically (N. R. I, 24; O. R. II, 709).

9. Plaintiff's said Chicago area property has had during this entire period and now has a value, commonly called the element of going value, over and above the bare structural value of its physical plant, the reproduction cost of which physical plant is set forth in Finding 2 hereof. Such [fol. 2412] going value as of December 31 in each of the years 1923 to 1931 was as follows (N. R. I, 24):

1923	$22,350,000
1924	23,500,000
1925	25,900,000
1926	26,850,000
1927	28,900,000
1928	30,500,000
1929	33,000,000
1930	34,400,000
1931	34,000,000

10. The fair value of all of plaintiff's said Chicago area property (including working cash capital, materials and supplies, construction work in progress, and going value) as an average amount during the year for each of the years 1923 to 1931 was as follows (See Note p. 60 Plaintiff's Original Brief):

1923	$155,116,606
1924	167,549,232
1925	180,872,724
1926	192,247,892
1927	205,058,262
1928	219,571,008
1929	233,372,868
1930	248,171,701
1931	251,109,470

11. The average fair value of all of plaintiff's said property (as described in the foregoing Finding 10) for the year 1932 is in excess of the sum of $250,000,000 (Exhibit A10 and Plaintiff's Original Brief, pp. 76-77).

[fol. 2413] 12. The average fair value of plaintiff's said property for each of the years 1923 to 1931, inclusive, separated as between its exchange (intrastate), intrastate toll, total intrastate, and interstate toll property is as follows (See Note p. 75, Plaintiff's Original Brief):

	Exchange (intrastate)	Intrastate toll	Total intrastate	Interstate toll
1923	$141,644,521	$6,572,754	$148,217,275	$6,899,331
1924	152,359,903	7,343,312	159,703,215	7,846,017
1925	163,119,146	8,295,249	171,414,395	9,458,329
1926	172,071,875	9,257,198	181,329,073	10,918,819
1927	182,014,796	10,680,529	192,695,325	12,362,937
1928	192,223,654	12,439,698	204,663,352	14,907,656
1929	200,317,547	14,677,685	214,995,232	18,377,636
1930	209,952,979	16,768,694	226,721,673	21,450,028
1931	210,787,245	17,218,596	228,005,841	23,103,629

In arriving at the fair values above set out, plaintiff's entire Chicago property has been separated on the basis of its actual use. Certain portions of said property were used exclusively for exchange or local intrastate purposes, certain portions exclusively for intrastate toll purposes, and certain portions exclusively for interstate toll purposes. Such portions of property required no apportionment and have been directly segregated in accordance with their respective uses. The remainder of the property not so directly segregated, including the subscribers' station apparatus and equipment, the subscribers' lines and the local central office equipment, has been apportioned to plaintiff's exchange (intrastate), intrastate toll and interstate toll business, respectively, in accordance with its actual proportionate use for each of such classes of business (N. R. I, 169 et seq.).

There appear in the table set out below percentages for exchange (intrastate), intrastate toll, total intrastate and [fol. 2414] interstate toll, which represent the percentage proportions of the average fair value of plaintiff's total Chicago property (Finding 10) used respectively for the said classes of business during the several years (N. R. I, 177):

	Exchange (intrastate)	Intrastate toll	Total intrastate	Interstate toll
1923	91.31%	4.24%	95.55%	4.45%
1924	90.94	4.38	95.32	4.68
1925	90.18	4.59	94.77	5.23
1926	89.51	4.81	94.32	5.68
1927	88.76	5.21	93.97	6.03
1928	87.55	5.66	93.21	6.79
1929	85.84	6.29	92.13	7.87
1930	84.60	6.76	91.36	8.64
1931	83.94	6.86	90.80	9.20

Revenues and Expenses

13. The plaintiff's revenues from its Chicago business for each of the years 1923 to 1931, likewise separated on the basis of use between its exchange (intrastate), intrastate tolls, total intrastate and interstate toll revenues, were as follows (Exhibits A55, A187, A192; See Original Brief, p. 79):

	Exchange (intrastate)	Intrastate toll	Total intrastate	Interstate toll
1923	$34,722,009	$2,424,172	$37,146,181	$1,831,641
1924	36,893,027	2,760,927	39,653,954	1,996,198
1925	39,325,191	3,235,260	42,560,451	2,337,343
1926	42,065,536	3,867,162	45,932,698	2,743,565
1927	44,784,758	4,378,822	49,163,580	3,148,991
1928	48,664,346	5,013,414	53,677,760	4,248,800
1929	52,696,315	5,583,287	58,279,602	7,634,313
1930	52,945,453	5,752,810	58,698,263	7,986,725
1931	51,129,424	5,366,875	56,496,299	7,535,843

[fol. 2415] 14. Plaintiff's reasonable and necessary expenses, including the expense of depreciation, likewise separated on the basis of use, as between its exchange (intrastate), intrastate toll, total intrastate and interstate expenses for its Chicago business for each of the years 1923 to 1931 were as follows (Exhibits A55, A187, A192):

	Exchange (intrastate)	Intrastate toll	Total intrastate	Interstate toll
1923	$30,877,663	$1,867,740	$32,745,403	$1,292,058
1924	32,824,096	2,112,617	34,936,713	1,436,330
1925	34,873,441	2,364,290	37,237,731	1,676,405
1926	37,386,539	2,744,850	40,131,389	1,927,004
1927	39,851,087	3,112,864	42,963,951	2,199,454
1928	42,851,344	3,557,068	46,408,412	3,180,379
1929	44,575,535	4,103,076	48,678,611	6,118,975
1930	45,545,288	4,397,707	49,942,995	6,218,132
1931	44,261,227	4,318,297	48,579,524	5,896,824

15. The net earnings (Finding 13, less Finding 14) from plaintiff's Chicago business available for a return, separated between plaintiff's exchange (intrastate), intrastate toll, total intrastate and interstate business, for each of the years 1923 to 1931 were as follows:

	Exchange (intrastate)	Intrastate toll	Total intrastate	Interstate toll
1923	$3,844,346	$556,432	$4,400,778	$539,583
1924	4,068,931	648,310	4,717,241	559,868
1925	4,451,750	870,970	5,322,720	660,938
1926	4,678,997	1,122,312	5,801,309	816,561
1927	4,933,671	1,265,958	6,199,629	949,537
1928	5,813,002	1,456,346	7,269,348	1,068,421
1929	8,120,780	1,480,211	9,600,991	1,515,338
1930	7,400,165	1,355,103	8,755,268	1,768,593
1931	6,868,197	1,048,578	7,916,775	1,639,019

16. If the rates in suit had been made effective, the plaintiff's said revenues and net earnings available for a return [fol. 2416] for each of the years 1923 to 1931 would have been reduced in the following amounts, divided between its intrastate and interstate business (Exhibit A55; N. R. I, 234; N. R. II, 338, 592):

	Exchange (intrastate)	Intrastate toll	Total intrastate	Interstate toll
1923	$1,512,859	$28,809	$1,541,668	$15,572
1924	1,519,815	31,180	1,550,995	15,825
1925	1,548,150	34,411	1,582,561	17,925
1926	1,611,533	39,037	1,650,570	17,684
1927	1,635,362	41,715	1,677,077	18,653
1928	1,668,214	45,087	1,713,301	20,809
1929	1,693,349	47,233	1,740,582	21,854
1930	1,599,053	46,825	1,645,878	20,496
1931	1,396,167	37,577	1,433,744	17,120

17. The total net intrastate earnings from its said Chicago business available to plaintiff for a return if the rates in suit had been in effect, divided as between plaintiff's exchange (intrastate), and intrastate toll, and the total intrastate net earnings for each of the years 1923 to 1931, would have been as follows (Finding 15, minus Finding 16):

	Exchange (intrastate)	Intrastate toll	Total intrastate
1923	$2,331,487	$527,623	$2,859,110
1924	2,549,116	617,130	3,166,246
1925	2,903,600	836,559	3,740,159
1926	3,067,464	1,083,275	4,150,739
1927	3,298,309	1,224,243	4,522,552
1928	4,144,788	1,411,259	5,556,047
1929	6,427,431	1,432,978	7,860,409
1930	5,801,112	1,308,278	7,109,390
1931	5,472,030	1,011,001	6,483,031

[fol. 2417] The net earnings of plaintiff from its entire Chicago business for the year 1932 will be approximately $2,000,000 less than in 1931. The decrease will be proportionately larger in the intrastate than in the interstate business. The additional loss in revenue if the rates in suit had been in effect would have amounted to $1,270,000 for the year 1932. The amount available for a return on plaintiff's intrastate business in Chicago for 1932 will be approximately $1,800,000 less than in 1931 (N. R. IV, 1082).

These net earnings would have resulted in the following rates of return to plaintiff upon the fair value of its property devoted to its intrastate business in the Chicago area as found in Finding 12 hereof:

	Exchange (intrastate)	Intrastate toll	Total intrastate
1923	1.65%	8.03%	1.93%
1924	1.67	8.40	1.98
1925	1.78	10.08	2.18
1926	1.78	11.70	2.29
1927	1.81	11.46	2.35
1928	2.16	11.34	2.71
1929	3.21	9.76	3.66
1930	2.76	7.80	3.14
1931	2.60	5.87	2.84
1932	Lower than in 1931		

18. In making Findings 15 and 17 hereof there have been apportioned to plaintiff's interstate earnings, the following amounts representing net revenues properly attributable to the interstate use of plaintiff's exchange property and facilities:

[fol. 2418]

	Based on present rates	Based on rates in suit
1923	$260,614	$245,042
1924	278,223	262,398
1925	327,430	309,505
1926	335,599	317,915
1927	373,025	354,372
1928	448,464	427,655
1929	508,729	486,875
1930	492,965	472,469
1931	448,700	431,580

From the commencement of the telephone industry, exchange rates have been fixed by the Bell Companies, including plaintiff, and by independent companies to provide compensation for every use of the exchange facilities, including their use for both intrastate and interstate toll messages. Likewise, during that period of time, toll rates have been fixed to provide compensation only for the use of the toll plant up to its connection with the exchange facilities. Exchange rates of plaintiff, therefore, produce both intrastate and interstate revenues. The portion shown above of the exchange revenues which has been determined to be interstate revenues and excluded in Findings 15 and 17 under the intrastate headings relates to and was received as compensation for the interstate use of such exchange facilities. Unless such revenues are apportioned to the interstate revenues, plaintiff will receive no compensation for the interstate use of its exchange facilities (N. R. I, 270, 295, 300).

[fol. 2419] Fair Rate of Return

19. Plaintiff was entitled to the opportunity to earn a fair rate of return upon the fair value of its property. We find that, having regard to all the facts and circumstances of this case, the fair rate of return upon the average fair value of the intrastate property as determined in Finding 12 was 8 per cent for each of the years 1923 to 1927 inclusive; 7 per cent for each of the years 1928, 1929 and 1930; 7½ per cent for 1931; and 8 per cent for 1932 (N. R. I, 159, 160, N. R. IV, 1154).

Western Electric Company

20. From 1916 to the present time, the Western Electric Company has engaged chiefly in the manufacture of telephone apparatus and lead covered cable and in the purchase of supplies manufactured by others and in their sales to the Bell Associate Companies (N. R. II, 319). In this same period, Western's business with its Bell customers amounted to more than 90 per cent of its sales of its own manufactures, and its business with the Bell customers, if supplies are included, amounted to 82 per cent of its total sales. Western's sales of its manufactured articles constitute approximately 70 per cent of its total sales to its Bell customers (Exhibit A90).

21. "Average investment" of Western, as that term is used in these findings, includes its plant and manufacturing facilities, merchandise, receivables and cash, less current accounts payable, all at cost to Western except merchandise, which is cost or market, whichever is lower. There is not included in Western's "average investment" any [fol. 2420] amount for patents, good will, development expense, or going concern value. A large part of Western's manufacturing plant and facilities have been constructed by it at less cost than they could have been purchased from others and these savings are reflected in its "average investment" (N. R. II, 330, 339, 502).

22. Western's factories are advantageously located, well designed and equipped for efficient and economical operation. It maintains a group of engineers, who plan its manufacturing operations and constantly study the problem of cheapening its products. As a result, Western's operating costs are low and its products are of a high standard (N. R. II, 486, et seq.).

23. The prices charged by Western to plaintiff and its other Bell customers have, during the entire period 1916 to 1932, inclusive, been lower than prices charged by other manufacturers for comparable materials, and lower than the prices charged by Western to independent telephone companies and others for the same materials, and have at all times been reasonable and fair prices (O. R. III, 1076, et seq.; N. R. II, 421-422, 574).

24. At any given time Western's prices to all of its Bell customers for its telephone apparatus, lead covered cable and supplies have always been the same (N. R. II, 342).

25. (As amended.) Plaintiff's Exhibit A 194 shows the sales of Western to its Bell customers, the earnings on such sales, the per cent of earnings to sales, average investment, per cent earnings to average investment, average investment less amount of depreciation reserve account and per cent earnings to average investment less amount of depreciation reserve account, for each of the years 1916 to 1932, for that total period and also for the period 1923 to 1932, inclusive (N. R. IV, 1071).

[fol. 2421] We find that four adjustments should be made to the figures appearing in said Exhibit A194, and that when effect is given to these adjustments said exhibit is correct. These adjustments are on account of the accrual of an extraordinary reserve against plant and machinery in the years 1924, 1925, 1926 and 1927; the difference between the accruals for Federal income taxes made currently and the actual taxes paid; the inclusion in the Bell expenses for the year 1924 of an accrual for pension fund purposes relating to non-Bell business, and a charge to expense on account of patents purchased applicable to the Bell business, which were charged to surplus (N. R. IV, 1383; Exhibit A257). When effect is given to these adjustments, Western's earnings and profits on sales are as follows:

	Profit on sales	Earnings on average investment	Earnings on average investment less amount of depreciation reserve account
For period 1916 to 1932	4.7	6.1	.8
For period 1923 to 1932	4.5	5.9	7.6

[fol. 2422] Western's earnings and profits on sales for each of the years 1916 to 1932, when effect is given to these adjustments, are as follows:

	Profit on sales	Earnings on average investment	Earnings on average investment less amount of depreciation reserve account
1916	.5	.8	1.1
1917	2.3	3.6	4.4
1918	2.7	3.1	3.9
1919	3.4	3.9	5.0
1920	3.7	4.9	6.1
1921	7.7	8.7	10.7
1922	4.0	5.2	6.6
1923	3.4	4.8	6.2
1924	4.7	6.9	8.8
1925	7.2	10.2	12.9

	Profit on sales	Earnings on average investment	Earnings on average investment less amount of depreciation reserve account
1926	5.2	8.3	10.6
1927	6.9	10.4	13.6
1928	6.8	11.8	15.8
1929	4.8	9.1	11.7
1930	3.5	9.1	5.8
1931	5.0	4.2	5.6
1932	(3.9)	(2.3)	(3.3)

26. Western, because of its relationship with the Bell System, has no sales expense and no credit risk involved in its Bell business. By receiving advance estimates from the Bell Associate Companies of their requirements, it is able to plan its manufacturing work more efficiently and economically. These factors result in reducing Western's costs, but they are not advantages retained by Western, since such reductions in costs are passed on by it in the prices charged to its Bell customers. As a result of this relationship, Western has been enabled to sell and has sold its manufac- [fol. 2423] tured articles to its Bell customers at lower prices than otherwise would have been possible (N. R. II, 412, 418).

27. Western's earnings on investment and profit on sales vary from year to year due to the relative weighting of several important factors, among which are reductions in prices of its products, rate of turnover, changes in costs of material and wage schedules (N. R. II, 329). Western's relationship to the Bell System is permanent, not casual. It supplies substantially all the requirements of all the Bell Associated Companies for telephone apparatus and lead covered cable at all times.

It is, therefore, necessary, in arriving at what are reasonable earnings on investment and profit on sales in the Bell business of Western, to take into consideration the results for a period of years and not merely a single year (N. R. II, 329, 430).

28. Western's rate of earnings on its investment in its Bell business, and on its investment less the amount of its depreciation reserve account, has been substantially one-third lower than those of other large manufacturing companies whose risks and hazards make them fairly comparable with Western. Its rate of profit on sales in its Bell business—as distinguished from earnings on investment—has been less than one-half of the rate of profit made on

sales by other large comparable manufacturing industries (Exhibits A85, A86, A87, A271).

29. The earnings of Western on its Bell business for the entire period 1916 to 1932, and for the period 1923 to 1932, have been reasonable. Its profits on sales during the same periods have also been reasonable.

30. It would not have been possible for Western to sell its manufactured products as cheaply as it did except for [fol. 2424] the economies resulting from quantity production for the entire Bell System. Western develops for the present and future needs of all of these companies which are engaged in rendering a uniform and nation-wide telephone service through plants engineered and constructed along similar lines. Because of these facts, Western's total earnings on its investment and its profit on its total sales are a fair basis for determining the reasonableness of Western's earnings in its dealings with plaintiff (N. R. II, 450).

31. The sales of Western to plaintiff for use in its entire business and for use in its Chicago area have been a reasonably fair and representative cross section of the total sales of Western to all of its Bell customers. The earnings made by Western on its investment allocated to the business done with the plaintiff and its profit on sales made to plaintiff for its Chicago area have been fair and reasonable during the periods 1916 to 1932 and 1923 to 1932. No unreasonable or unfair profit has been made by the Western in any of its dealings with the plaintiff, and all of the telephone apparatus, lead covered cable and supplies sold by Western to plaintiff have been sold at fair and reasonable prices (N. R. II, 334, 344, 438, 450; Exhibits A88, A89, A93 to A98, inclusive).

Depreciation Expense

32. The reasonable and proper amount, fair alike to public and private interest, to be allowed as the annual charge for depreciation applicable to the reproduction cost of the intrastate portion of plaintiff's said Chicago area property (and included in the expenses shown in Finding 14, [fol. 2425] in the column headed "Total Intrastate") for each of the years is as follows:

1923	$5,662,154
1924	6,382,159
1925	6,768,618
1926	7,217,128
1927	7,608,468
1928	7,981,108
1929	8,148,888
1930	8,581,118
1931	8,934,628

Plaintiff's Original Brief, page 129. Column 3 of the table at the top of the page gives the amounts shown in this finding, which are derived and may be verified as follows:

The table at the bottom of page 128 of the brief gives, in column 3, the total annual charge for depreciation based on reproduction cost (these figures being taken from plaintiff's Exhibit A267 identified by witness Kruse, N. R. V, page 1397). In order to obtain the intrastate part shown in this request 32, apply to these total figures the percentages shown in the table at the bottom of page 129 of the brief, in the column headed "Total Intrastate, Reproduction New". These percentages are in turn derived from the dollar amounts shown in Exhibit A55.

License Contract

33. On the 1st day of February, 1919, the American Telephone and Telegraph Company, a corporation organized under the laws of New York, hereinafter called the American Company, entered into a contract with the Chicago Telephone Company, the predecessor of plaintiff, and at about the same time entered into a contract in similar form [fol. 2426] with each of twenty-two other operating telephone companies in the United States (which said contract is generally known and has been referred to and will be referred to hereinafter as the License Contract). By the terms of said contract the American Company agreed to furnish to the predecessor of plaintiff and to each of the other so-called Licensee Companies certain services and assistance and benefits necessary for the conduct of their several businesses on a high plane of efficiency. The principal items of said services and benefits were as follows:

A. Furnishing the transmitters, receivers and induction coils (called telephones) necessary to supply one set to each telephone sub-station, with a margin over for safety; maintaining at its own cost (that of the American Company) the said instruments in first class working order and condition (Plaintiff's Ex. 7, Sec. 3, O. R. IV, 1198-1200).

B. The right of the Licensee to:

(1) "* * * use, subject to the provisions herein set forth, all telephonic devices, apparatus, methods and systems covered by patents now or hereafter owned or controlled by the Licensor or which it may have the right to authorize the Associated Companies of the Bell System to use, and also the right to use, subject to the provisions herein set forth, as and when completed and standardized, all new and improved apparatus and developments in the art of telephony resulting from research and experimental work conducted by or under the direction of the Licensor * * *; and without expense to the Licensee, protection and defense against and to be saved harmless from all actions or suits, charging infringement of patents, aris-[fol. 2427] ing out of the use of telephones furnished hereunder to the Licensee; as well as ample provision for protecting and defending against, and insuring the Licensee against judgments for damages and profits in, all actions or suits, charging infringement of patents, arising out of the use of any apparatus, methods or systems which the Licensor may recommend" (Plaintiff's Ex. 7, Sec. 9(a), O. R. IV, 1206).

(2) "The continuous prosecution by the Licensor of the fundamental work of research, investigation and experimentation in the development of the art and science of telephony and in the development of plans, methods, systems and ideas designed to promote safety, economy and efficiency in the equipment, construction and operation of the telephone plants of the Associated Companies of the Bell System, and the direction of the Licensor of the development work by others for the production of materials and apparatus necessary for rendering the products of such work of the Licensor available for use by such Associated Companies" (Plaintiff's Ex. 7, Sec. 9(b), O. R. 1206-1207).

(3) "Advice and assistance in general engineering, plant, traffic, operating, commercial, accounting (including

the auditing of accounts), patent, legal, administrative and others matters pertaining to the efficient, economical and successful conduct of the telephone business of the Licensee * * *" (Plaintiff's Ex. 7, Sec. 9(c), O. R. IV, 1207).

(4) "Advice and assistance in any financing required to be done by the Licensee in the extension, development or improvement of its telephone system * * *" (Plaintiff's Ex. 7, Sec. 9(d), O. R. IV, 1207).

(5) "Active assistance, cooperation and support in connection with the adoption from time to time by the Licensee [fol. 2428] of such measures as will, in the united judgment of the parties hereto, best protect and preserve the health and promote the well-being in employment of the employees of the Licensee and, in other ways, conserve the high quality of its service to the public through the maintenance of a stable, contented and efficient personnel * * *" (Plaintiff's Ex. 7, Sec. 9(f), O. R. IV, 1208).

The American Company further agreed that in order that the foregoing services might be promptly and efficiently performed when needed by the Licensee, it would

(a) "Render available for use by the Associated Companies of the Bell System all products of the Licensor's fundamental work of research, investigation and experimentation, and all inventions, discoveries and patents, and all methods and systems covered by patents, relating to the art of telephony, or all apparatus and appliances, methods and systems embodying such inventions, discoveries and patents, which, after investigation, experimentation and tests, are in each case pronounced by the technical experts of the Licensor to be of advantageous and practical usefulness in telephony and recommended for use, and to this end, if any patent rights held by others in any such invention or discovery are necessary to make such invention or discovery available for such use, the Licensor will, in case such invention or discovery relates to telephones, acquire the requisite patent rights therein, * * *" (Plaintiff's Ex. 7, Sec. 10(a), O. R. IV, 1209).

(b) "Maintain continuously an organization of specialists trained in the various branches of the work required to be done by the Licensor in rendering the foregoing services, of such numbers and possessed of such technical knowledge and experience as will enable said work to be

[fol. 2429] so done as to relieve the Licensee from the necessity of attempting to perform said work for itself." (Plaintiff's Ex. 7, Sec. 10(b), O. R. IV, 1209).

On September 25th, 1930, the 1919 contract was by mutual agreement of the parties restated in slightly briefer form embodying substantially the same rights and privileges to the Licensee Companies, which latter contract has remained in force up to the present time (Plaintiff's Ex. A-206).

34. For all of the above services and others provided for in the contract the plaintiff and each of the other Licensee Companies agreed to pay to the American Company four and one-half per cent (4½%) of its gross annual earnings. That rate was paid for the years 1923, 1924 and 1925 (Plaintiff's Ex. 7, Sec. 11, O. R. IV, 1210).

In 1926 the rate of compensation for said services was voluntarily and temporarily reduced by the American Company without consideration to it, from 4½% to 4%, which rate of 4% continued for the years 1926 and 1927 (Plaintiff's Ex. 7, O. R. IV, 1215).

At the end of 1927 the rate of compensation was again reduced, this time from 4% to 2% of the gross earnings of the Licensee Companies, at which time the American Company ceased to furnish the instruments, which rate was paid for the year 1928 (N. R. IV, 1165).

At the end of 1928 there was a further voluntary reduction by the American Company from 2% to 1½% of the gross earnings of the Licensee Companies, which rate has remained in force to date (N. R. IV, 1165).

35. Said License Contract was a modification of an agreement entered into on the 23rd day of December, 1881, between the American Bell Telephone Company, predecessor of the American Company, and the Chicago Telephone [fol. 2430] Company, predecessor of the Illinois Bell Telephone Company, the plaintiff (Plaintiff's Ex. 7, Preamble, O. R. IV, 1196).

36. At the time when the said agreement was entered into the said American Company was the owner of all or practically all of the capital stock of sixteen of said twenty-two companies; was the owner of the majority of the stock of three of the said companies, but was only a minority

holder of the stock of the following companies: Southern New England Telephone Company, and Cincinnati and Suburban Bell Telephone Company, each of which was a large and important company, having an investment in plant of many millions of dollars (Plaintiff's Ex. A-99).

37. At the time the said contract of 1881 was entered into, the American Company or its predecessor owned fundamental patents which practically excluded from the telephone business in the United States all persons other than its licensees. (City's Ex. 23, Sec. 1, O. R. VI, 1925); between 1881 and 1919 the American Company had taken out or acquired a great number of important patents bearing upon the construction and operation of telephone plants, and throughout that period had permitted the said Licensee Companies to use all of its said patents; during said period the American Company had also gradually built up the practice of performing for the said Associated Companies all or practically all of the services referred to in said License Contract agreement of the first day of February 1919.

38. The American Company from the first day of February, 1919, until the first day of January, 1928, performed all of the services required of it by the said License Contract and enumerated in Finding (33) above. On the first [fol. 2431] day of January, 1928, by mutual agreement, the American Company ceased to supply to the plaintiff and to the other Licensee Companies telephone receivers, transmitters and induction coils, and the compensation paid to said American Company by the Licensee Companies was reduced to two per cent (2%) of their respective gross earnings (N. R. IV, 1165).

39. The actual costs to the American Company of the work performed by its twelve departments which each rendered services to the Licensee Companies pursuant to the License Contract, to wit, Operation and Engineering, Development and Research, Information, Personnel, Public Relations, Treasurer, Comptroller, Secretary, Administration (including Sundry Items), General Service Bureau, Operation-C (General) and Legal, were the following amounts in the following years:

1923	$10,678,072
1924	11,428,025

1925	12,254,366
1926	14,167,860
1927	15,667,287
1928	17,111,950
1929	19,139,695
1930	23,611,735
1931	21,448,341

(Plaintiff's Ex. A-170, Col. (a), line (a).)

Those portions of the costs set forth above in this Finding (39), which were incurred in furnishing License Contract Services to the Licensee Companies, were the following amounts in the following years:

[fol. 2432]

1923	$10,134,582
1924	10,941,548
1925	11,716,894
1926	13,625,573
1927	15,108,267
1928	16,444,163
1929	18,402,303
1930	22,494,383
1931	20,742,677

(Totals of Plaintiff's Exs. A-103, Col. 6; A-117, Col. 3; A-124, Col. 4; A-150, Col. 6, plus A-151, Col. 6; A-153, Col. 2; A-154, Col. 4; A-155, Col. 4; A-156, Col. 4; A-157, Col. 4; A-158, Col. 4; A-159, Col. 4; A-160, Col. 4.)

The reasonable amounts of the said costs which should be allocated to the operating expenses of the Chicago area of the plaintiff are the following amounts in the following years:

1923	$604,547
1924	632,691
1925	668,092
1926	776,420
1927	844,578
1928	923,333
1929	1,019,735
1930	1,194,793
1931	1,083,370

(Plaintiff's Ex. A-170, Col. (b), line (a).)

The reasonable amounts of said costs which should be allocated to the operating expenses of the intrastate busi-
[fol. 2433] ness of the Chicago area of plaintiff are the following amounts in the following years:

1923	$581,514
1924	608,586
1925	640,233
1926	741,713
1927	804,460
1928	864,886
1929	907,257
1930	1,063,725
1931	967,126

(Plaintiff's Ex. A-170, Col. (b), line (a) modified by percentages set forth in Plaintiff's Main Brief, pp. 231-2.)

40. The actual costs incurred by the American Company and shown on its books for maintaining the said receivers, transmitters and induction coils (telephones) furnished to said Licensee Companies, were the following amounts in the following years:

1923	$1,086,422
1924	1,328,873
1925	1,613,737
1926	2,033,810
1927	2,066,815

(Plaintiff's Ex. A-162, p. 2, upper set of figures for total for each year, less lower set.)

The reasonable amounts of said costs which should be allocated to the operating expenses of the intrastate busi-
[fol. 2434] ness of the Chicago area of plaintiff are the following amounts in the following years:

1923	$68,931
1924	83,036
1925	100,469
1926	126,225
1927	129,852

(Plaintiff's Ex. A-162, p. 2, last Col., Balance after subtracting figures in lower group for each year from those in upper group for Chicago area modified by the percentages set forth in Plaintiff's Main Brief pp. 231-2.)

41. The said receivers, transmitters and induction coils (telephones) owned by the American Company and supplied to the Licensee Companies were subject to wear and tear and loss of value from other causes and a reasonable annual charge for the expense of depreciation constituted a part of the costs to the American Company of furnishing said telephone instruments to said Licensee Companies.

The American Company in the years 1923 to 1927, both inclusive, used an annual depreciation rate of seven per cent (7%) in connection with said instruments, which was a a fair and reasonable rate applicable to those years (N. R. III, 939). The American Company applied said seven per cent (7%) rate to the cost of the instruments and thereby developed depreciation charges for each of the years 1923-1927 both inclusive, which were not in any way excessive; said amounts were as follows:

[fol. 2435]

1923	$2,133,172
1924	2,390,753
1925	2,648,034
1926	2,920,151
1927	3,150,992

(Plaintiff's Ex. A-162, lower group, p. 2.)

The reasonable amounts of the said costs which should be allocated to the operating expenses of the intrastate business of the Chicago area of the plaintiff are the following amounts in the following years:

1923	$135,344
1924	149,389
1925	164,862
1926	181,235
1927	197,969

(Plaintiff's Ex. A-162; Chicago area figures modified by percentages set forth in Plaintiff's Main Brief, pp. 231-2.)

42. The reasonable value of the said receivers, transmitters and induction coils (telephones) furnished by the said American Company were the following amounts in the following years:

1923	$33,775,912
1924	38,727,620
1925	42,681,064
1926	44,548,049
1927	43,182,189

(Plaintiff's Ex. A-202, line 3, N. R. IV, 1176.)

[fol. 2436] The fair rate of return thereon was eight per cent (8%) per annum (N. R. I, 159-160). The fair return rate for expense of depreciation was seven per cent (7%), (N. R. III, 939) and the fair amounts which should be allowed to the American Company for annual expense of depreciation and fair return upon its property which includes in addition to the amounts set forth above in this Finding (42), a margin over for safety held by the American Company in its warehouses on call, conservatively estimated to be at least 6% of the instruments furnished aggregated the following amounts in the following years:

1923	$5,588,298
1924	6,407,570
1925	7,061,674
1926	7,370,571
1927	7,144,587

(Plaintiff's Ex. A-202, line 6 plus line 7.)

Adding to the above the cost of maintaining the instruments, as found in Finding (40) above, the total fair allowances to the American Company for furnishing and maintaining said instruments are the following amounts in the following years:

1923	$6,674,720
1924	7,736,443
1925	8,675,411
1926	9,404,381
1927	9,211,402

(Plaintiff's Ex. A-202, line 9.)

The reasonable amounts thereof which should be allocated to the operating expenses of the intrastate business [fol. 2437] of the Chicago area of the plaintiff are the following amounts in the following years:

1923	$415,482
1924	478,354
1925	529,282
1926	570,327
1927	563,855

See p. 301, line 2 (b) plus line 2 (c), Plaintiff's Ex. A-163, line 9 modified by percentages set forth in Plaintiff's Original Brief pp. 231-2.)

43. During the period from 1923 to 1931, both inclusive, the American Company maintained average annual sums varying from $60,000,000 to $93,000,000, in the form of cash of short term non-fluctuating low yield securities for the purpose of meeting any reasonable demands of the Licensee Companies (excluding Long Lines) for funds. The difference between the amounts received as interest on said funds and the amounts which it cost the American Company to obtain the money to supply such funds were the following amounts in the following years:

1923	$2,274,354
1924	2,526,771
1925	3,280,316
1926	2,876,385
1927	2,287,094
1928	2,313,767
1929	898,015
1930	3,460,721
1931	3,126,906

(Plaintiff's Ex. A-169, p. 2, Col. (5).)

[fol. 2438] The reasonable amounts thereof which should be allocated to the operating expenses of the intrastate business of the Chicago area of the plaintiff are the following amounts in the following years:

1923	$94,071
1924	106,942
1925	163,463
1926	153,878

1927	139,421
1928	140,875
1929	39,149
1930	157,135
1931	131,196

(Plaintiff's Ex. A-169, p. 2, Col. (10), modified by percentages set forth in Plaintiff's Original Brief pp. 231-2.)

44. Under the said License Contract the American Company was obligated to insure and hold harmless the plaintiff and all of the other licensee companies against loss or damage from suits or judgments for infringements of any patents, when such infringement was the result of the use of any apparatus recommended to said Licensees by the American Company. (Plaintiff's Ex. 7, Sec. 9 (a), O. R. 1206.) Said obligation constituted a real and serious liability and one which might subject the American Company to losses amounting to millions of dollars. (N. R. IV, 1088-1089, 1218, 1219.)

The American Company made reasonable provision to meet the possible losses, resulting from said undertaking on its part, by setting up large sums in a contingent reserve which sums aggregated $30,395,800 over the period from January 1, 1923 to January 1, 1932.

(Plaintiff's Ex. A-200, (a) last column.)

It was reasonable for the said American Company to make provision for its said liability over a number of years [fol. 2439] rather than to charge heavy losses in particular years when incurred. Also, there was no practical way by which plaintiff and the other licensee companies could make compensation to the said American Company for its said undertaking except by charging against their revenues fairly equal amounts over the period covered by said undertaking of the American Company.

The reasonable amounts which should be allocated to the operating expenses of the intrastate business of the Chicago area of the plaintiff with respect to said undertaking of the American Company are the following amounts in the following years:

1923	$152,942
1924	147,171
1925	281,740

1926	191,060
1927	140,018
1928	137,695
1929	130,786
1930	125,532
1931	98,382

(Plaintiff's Original Brief, p. 301, line 2 (g).)

45. The American Company incurred and paid taxes in connection with rendering its License Contract services to the plaintiff and to the other Licensee Companies. The amount of said taxes in each of the years 1923-1931 inclusive, were as follows:

1923	$2,932,233
1924	3,481,426
1925	3,889,407
1926	3,360,113
1927	3,304,572
1928	1,642,660
1929	987,520
1930	956,597
1931	1,495,940

(Plaintiff's Ex. A-161, col. 3.)

[fol. 2440] The reasonable amounts thereof which should be allocated to the operating expenses of the intrastate business of the Chicago area of the plaintiff are the following amounts in the following years:

1923	$203,459
1924	211,228
1925	238,046
1926	160,482
1927	154,036
1928	57,446
1929	22,390
1930	19,844
1931	45,895

(Plaintiff's Ex. A-161, last column, Chicago area modified by percentages set forth in Plaintiff's Main Brief, pp. 231-2.)

46. In addition the foregoing, the American Company furnished office space and office furniture and fixtures at cost, and at less than value, to its twelve departments which devoted the whole or greater part of their time and efforts to rendering License Contract services to the said Licensee Companies, including the plaintiff. The costs to the American Company of providing these facilities in connection with the rendition of the License Contract services were the following amounts in the following years:

1923	$196,297
1924	90,907
1925	155,186
1926	36,826
1927	42,338
1928	45,384
1929	47,816
1930	51,245
1931	55,610

(Plaintiff's Ex. A-167, col. 3.)

[fol. 2441] The reasonable amounts thereof which should be allocated to the operating expenses of the intrastate business of the Chicago area of the Plaintiff are the following amounts in the following years:

1923	$11,739
1924	5,289
1925	8,863
1926	2,094
1927	2,391
1928	2,502
1929	2,482
1930	2,605
1931	2,795

(Plaintiff's Ex. A-167, col. 6, Chicago area, modified by percentages set forth in Plaintiff's Original Brief, pp. 231-2.)

47. The total License Contract payments received by the American Company (excluding those received from its Long Lines Department) were the following amounts in the following years:

1923	$24,309,368
1924	26,784,492
1925	30,197,214
1926	29,850,303
1927	32,454,652
1928	17,622,365
1929	14,455,588
1930	15,025,890
1931	14,718,361
Total	$205,418,233

(Plaintiff's Ex. A-199, line A.)

[fol. 2442] 48. The costs incurred by the American Company in rendering said License Contract services, excluding the services to its Long Lines Department, but including the cost of Temporary Financing and including fair allowances for the use of the receivers, transmitters and induction coils of the American Company and after making all due allowances for credits for royalties received by the American Company were the following amounts in the following years:

1923	$25,793,132
1924	29,076,869
1925	35,206,249
1926	34,221,972
1927	33,375,679
1928	22,996,160
1929	23,799,813
1930	28,604,025
1931	27,130,086
Total	$260,203,985

(Plaintiff's Ex. A-198, line B plus the total of the figures in D plus the amount in line (a) of foot note diminished by Long Lines plant in service percentage shown on Ex. A-118, minus one third (N. R. IV, 1172) of credit for royalties in line (e)2, of foot note in Ex. A-199.)

The total amount of said costs exceeded the total amount of said payments found in Finding (47) by fifty-four mil-

lion seven hundred and eighty-five thousand and seven hundred and fifty-two dollars.

[fol. 2443] 49. The amounts which have been included in the costs in Finding (48), for Temporary Financing are the following amounts in the following years:

1923	$1,535,913
1924	2,260,603
1925	2,606,279
1926	2,095,365
1927	1,839,609
1928	1,051,430
1929	2,452,536
1930	1,137,450
1931	1,709,528
Total	$16,688,713

(Plaintiff's Ex. A-170 line (f).)

50. The total amounts which should be allocated to the operating expenses of the intrastate business of the Chicago area of the plaintiff for all of the matters specifically dealt with above, excluding the cost of Temporary Financing and after making all due allowances for offsets and credits including those in respect of royalties received and for expenses incurred in other than License Contract activities, are the following amounts in the following years:

1923	$1,457,551
1924	1,555,714
1925	1,858,300
1926	1,815,398
1927	1,795,773
1928	1,195,664
1929	1,084,145
1930	1,353,084
1931	1,229,850
Total	$13,345,479

(Tabulation, plaintiff's original brief, p. 301; line 2(d) minus line 4. Note: The amounts actually paid by plaintiff to the American Company for the License Contract services [fol. 2444] in accordance with the contract, and for which

plaintiff claims credit as proper expenses in this suit, are shown in the next succeeding Request 51.)

51. (As Amended.) Plaintiff paid to the American Company for its License Contract services over the period 1923-1931, both inclusive, annual amounts which it charged on its book as deductions from gross revenues.

The portion thereof allocable to plaintiff's intrastate telephone expenses in the Chicago area are the following amounts in the following years:

1923	$1,662,014
1924	1,787,095
1925	1,901,069
1926	1,845,571
1927	1,980,880
1928	1,036,616
1919	834,276
1930	864,131
1931	834,199
Total	$12,745,851

We find that the foregoing amounts represent the reasonable and proper proportion, applicable to the intrastate business in the Chicago Area, of the payments made by plaintiff to the American Company in each year in accordance with the provisions of the License Contract, and that these amounts should be allowed in full.

(Tabulation, plaintiff's original brief, p. 301, line 1. See also plaintiff's Exhibit A-49. These are the amounts for which plaintiff has taken credit in arriving at the net earnings as shown in Request 15 herein, p. 9, supra, in the [fol. 2445] column headed "Total Intrastate". Note: These amounts paid by plaintiff are comparable with the "Costs" to the American Company of rendering the License Contract Services, applicable to the intrastate business of plaintiff in the Chicago Area, shown in the preceding Request 50.)

52. The American Company permitted the employees of the plaintiff to purchase stock of the American Company on such terms and conditions that they need never lose and might make substantial profits, and during the period 1923-

1931, inclusive, plaintiff's employees availed themselves of that right and purchased stock of the American Company to such amounts and on such terms that the aggregate purchase price paid was five million dollars less than the amounts at which the stock could have been sold on the dates of purchase. This privilege was a great assistance to the plaintiff in building up and maintaining its organization (N. R. III, 866).

53. The American Company, moreover, under the said License Contract of the 1st day of February, 1919, licensed plaintiff and all of the other Licensee Companies, to use several thousand patents which it had acquired prior to 1919, (Plaintiff's Ex. 7, Sec. 9 (a), O. R. IV, 1206) no part of the costs of which and no return on the value of which is included in any of the above figures, although said patents had been acquired at considerable cost and had a value of many million dollars (Defendants' Deposition Exs. 196 and 197).

54. The License Contract services were of great value to plaintiff and it could not have obtained the same or similar services from any source other than the American Company without paying substantially more therefor than it [fol. 2446] actually did pay to the said American Company. (Testimony of F. L. Rhodes, O. R. III, 970-1033 and testimony of Frank Redmund, O. R. III, 112-124.)

55. At the time the said License Contract Agreement of the 1st day of February, 1919, was entered into, both the plaintiff and the American Company considered it fair and beneficial to the plaintiff, and that it would provide the American Company with no more than a fair profit.

56. The American Company has been reasonably diligent, and has been fair to the plaintiff in reducing percentages of gross earnings, which plaintiff was obligated to pay under said License Contract, as and when the amount of the gross earnings increased, in order to prevent said payments becoming excessive or oppressive.

57. Throughout the period 1923-1931, both inclusive, the arrangement between the plaintiff and the American Company with respect to said License Contract services and payments has been a fair and reasonable one to plaintiff.

58. The costs incurred by the American Company in rendering its License Contract services, together with fair compensation for, or a fair return upon the value of, the properties of the American Company, the use of which it contributed to its said licensees as a part of said License Contract, exceeded the amounts which the American Company collected from its said Licensees over said period from 1923 to 1931, inclusive; and the reasonable amounts of said costs and allowances which should be allocated to the operating expenses of the intrastate business of the Chicago area of the plaintiff for the years 1923-1931 inclusive exceeded the amounts which plaintiff paid to the American Company as its License payments under said Licensee [fol. 2447] Contract during said period and has charged as a deduction from revenues of its said intrastate telephone business by an amount of approximately six hundred thousand dollars. (See Plaintiff's Original Brief, table on p. 301, last column.)

59. The payments made by plaintiff to the American Company shown in Finding (51) were proper deductions from gross revenues.

Plaintiff further requests the Court to find, as

Conclusions of Law

1. At all times since the effective date of the order of the Illinois Commerce Commission herein complained of, the telephone rates prescribed in said order have been, and they are now, confiscatory of plaintiff's property; and said order is void.

2. The interlocutory injunction issued herein should be made permanent.

3. Plaintiff should be released and discharged from all obligation to refund any sums of money collected by it under the terms of the preliminary and interlocutory decrees herein, whether on account of the bond filed herein or otherwise.

4. Plaintiff should recover its taxable costs herein.

A final decree will be entered accordingly.

Respectfully submitted.

Charles M. Bracelen, William H. Thompson, Edward L. Blackman, Kenneth F. Burgess, Leslie N. Jones, Solicitors for Plaintiff. John H. Ray, of Counsel.

[fols. 2448 & 2449] IN UNITED STATES DISTRICT COURT

[Title omitted]

DEFENDANTS' REQUESTS FOR FINDINGS

Defendants request the Court to make the following findings:

This Court finds:

Net Income Avaliable for Return from Existing and Attacked Rates

Existing Rates*

1. That plaintiff's showing of net income available for return from the existing telephone rates is subject to three [fol. 2450] adjustments, the effect of each of which can be measured for each year under investigation:

(a) Excess of Charges for Depreciation, included in plaintiff's showing, over the allowance by the 1920 Order;

---

* Plaintiff's Requested Findings do not show the "rate of return which was realized from the intrastate business," as directed by the Supreme Court's Decision (Defendant's Brief, Appendix p. 22), shown in Plaintiff's Original Brief, p. 319, and discussed in Defendants' Brief, p. 983. Defendants' Requested Findings 70, 74, show such rate of return related to Plaintiff's Requested Rate Base and the adequacy thereof, although much below the rate of return estimated to be produced by the attacked rates and much below the prognosticated minimum rate of return to which plaintiff claims it is constitutionally entitled.

(b) Adjustment in respect to License Contract payments;

(c) Adjustment in respect to Separation of Revenues.

That the adjustment in respect to excess profits of the Western Electric can not be measured so as to be reflected in net income and should be reflected in Rate of Return.

That the net income available for return from the existing telephone rates, after giving effect to the three adjustments is:

[fol. 2451]

Net Income Available for Return from Existing Rates

Intrastate Exchange

	1923	1924	1925	1926	1927	1928	1929	1930	1931
Plaintiff's Showing of Net Earnings (Plaintiff's Finding No. 15)	$3,844,346	$4,068,931	$4,451,750	$4,678,997	$4,933,671	$5,813,002	$8,120,780	$7,400,165	$6,868,197
Add: Adjustments for									
(a) Excess of Charges for Depreciation, included in Plaintiff's Showing, over Allowance by 1920 Order	2,852,322	3,077,287	3,045,275	2,932,410	2,844,777	2,705,114	2,341,595	2,433,515	2,568,626
(b) Adjustment in respect to License Contract Payments	1,230,692	1,303,492	1,349,801	1,268,883	1,376,580	708,860	523,432	547,768	531,214
(c) Adjustment in respect to Separation of Revenues	742,845	825,842	955,115	1,075,354	1,206,851	1,418,756	1,607,254	1,618,918	1,440,500
Adjusted Net Income	8,670,205	9,275,552	9,801,941	9,955,644	10,361,879	10,645,732	12,593,061	12,000,366	11,408,537

Intrastate Total

Plaintiff's Showing of Net Earnings (Plaintiff's Finding No. 15)	$4,400,778	$4,717,241	$5,322,720	$5,801,309	$6,199,629	$7,269,348	$9,600,991	$8,755,268	$7,916,775
Add: Adjustments for									
(a) Excess of Charges for Depreciation, included in plaintiff's Showing, over Allowance by 1920 Order	2,981,053	3,235,315	3,196,136	3,092,901	3,015,624	2,891,817	2,556,086	2,663,528	2,808,145
(b) Adjustment in respect to License Contract Payments	1,318,988	1,404,254	1,411,592	1,411,592	1,516,622	785,355	583,859	612,065	590,567
(c) Adjustment in respect to Separation of Revenues	260,614	278,223	327,430	335,599	373,025	448,464	508,729	492,965	448,700
Adjusted Net Income	8,961,433	9,635,033	10,312,285	10,641,401	11,104,900	11,394,984	13,249,665	12,523,826	11,764,187

[fol. 2452] Attacked Rates

2. That plaintiff's showing of net income available for return from the attacked telephone rates is subject to three adjustments, the effect of each of which can be measured for each year under investigation:

(a) Excess of Charges for Depreciation, included in plaintiff's showing, over the allowance by the 1923 Order;

(b) Adjustment in respect to License Contract Payments;

(c) Adjustment in respect to Separation of Revenues.

That the adjustment in respect to excess profits of the Western Electric can not be measured so as to be reflected in the net income and should be reflected in Rate of Return.

That the net income available for return from the attacked telephone rates, after giving effect to the three adjustments, is:

[fol. 2453]

Net Income Available for Return from Attacked Rates

Intrastate Exchange

	1923	1924	1925	1926	1927	1928	1929	1930	1931
Plaintiff's showing of net income produced by present rates (Plaintiff's Finding 15)	$3,844,346	$4,068,931	$4,451,750	$4,678,997	$4,933,671	$5,813,002	$8,120,780	$7,400,165	$6,868,197
Deduct:									
Reduction of Net Revenues by reduction of telephone rates prescribed by 1923 Order (P. Brief, p. 87)	1,557,240	1,566,820	1,600,486	1,668,254	1,695,730	1,734,110	1,762,436	1,666,374	1,450,864
Net	2,287,106	2,502,111	2,851,264	3,010,743	3,237,941	4,078,892	6,358,344	5,733,791	5,417,333
Add:									
Excess of charges for Depreciation, included in Plaintiff's showing over Allowance by 1923 Order	3,045,699	3,169,205	3,123,656	3,447,770	3,867,964	4,201,016	4,260,342	4,327,877	3,695,384
Adjustment in respect to License Contract Payment	1,205,946	1,205,162	1,253,334	1,195,959	1,288,628	665,246	489,740	514,729	498,214
Adjustment in respect to Separation of Revenues	698,464	778,837	902,779	1,018,633	1,146,483	1,352,860	1,538,167	1,551,597	1,385,803
Adjusted Net Income	7,237,215	7,655,315	8,131,033	8,673,105	9,541,016	10,298,014	12,646,593	12,127,994	10,996,734

[fol. 2454]

Net Income Available for Return from Attacked Rates

Intrastate Total

	1923	1924	1925	1926	1927	1928	1929	1930	1931
Plaintiff's showing of net income produced by present rates (Plaintiff's Finding 15)	$4,400,778	$4,717,241	$5,322,720	$5,801,309	$6,199,629	$7,269,348	$9,600,991	$8,755,268	$7,916,775
Deduct:									
Reduction of Net Revenues by reduction of telephone rates prescribed by 1923 Order (P. Brief, p. 87)	1,557,240	1,566,820	1,600,486	1,668,254	1,695,730	1,734,110	1,762,436	1,666,374	1,450,864
Net	2,843,538	3,150,421	3,722,234	4,133,055	4,503,899	5,535,238	7,838,555	7,088,894	6,465,911
Add:									
Excess of charges for Depreciation over Allowance by 1923 Order	3,184,572	3,331,832	3,279,140	3,634,925	4,094,665	4,474,590	4,598,960	4,694,696	4,019,763
Adjustment in respect to License Contract Payment	1,294,242	1,305,924	1,369,532	1,320,668	1,428,670	741,741	550,167	579,026	557,567
Adjustment in respect to Separation of Revenues	245,042	262,398	309,505	317,915	354,372	427,655	486,875	472,469	431,580
Adjusted Net Income	7,567,394	8,050,575	8,680,411	9,406,563	10,381,606	11,179,224	13,474,557	12,835,085	11,474,821

[fol. 2455] Adjustments to Net Income

Expense of Depreciation

Part I

Depreciation Allowance Fixed by 1920 Order

3. That plaintiff has charged and collected during each of the years 1923 to 1931, inclusive, exchange service rates prescribed by the Order of December 20, 1920.

4. That plaintiff has made no attack on the exchange service rates prescribed by the 1920 Order and no ground exists to hold void that portion of the 1920 Order which prescribes the depreciation charges on intrastate and exchange service property to be charged and recorded against gross income produced by the existing telephone rates.

In determining the instrastate and exchange net income produced by the existing telephone rates prescribed by the 1920 Order as required by the Supreme Court's direction, this Court, on the present pleadings and record, must give the binding force of a valid legislative act to the State's judgment, as expressed by such Order, on the amount of depreciation charges properly to be covered by the telephone rates prescribed by such Order and properly to be charged and recorded against the gross income produced by them (Defendants' Brief, p. 464).

Under the law plaintiff should have charged and recorded against gross income produced by the existing telephone rates only the amount of depreciation charges fixed by the [fol. 2456] 1920 Order on Depreciation (Defendants' Brief, p. 447).

5. That plaintiff recorded on its books, against gross income produced by the existing telephone rates prescribed by the Order of December 20, 1920, in force during the years 1923 to 1931, inclusive, depreciation charges on intrastate and intrastate exchange property which exceeded the amount of depreciation charges fixed by the 1920 Order for each of said years as follows (Defendants' Brief, pp. 445-6):

	Intrastate	Intrastate exchange
1923	$1,540,414	$1,468,147
1924	1,323,046	1,264,338
1925	1,475,531	1,405,925
1926	1,643,145	1,564,490
1927	1,741,736	1,653,390
1928	1,919,774	1,815,308
1929	1,843,678	1,731,900
1930	1,947,182	1,816,781
1931	2,006,806	1,867,609

6. That plaintiff's showing of intrastate and exchange service net income available for return from the existing telephone rates included depreciation charges in excess of the amount of depreciation which plaintiff recorded on its books, and in excess of the allowance by the 1920 Order in the following amounts (Plaintiff's Brief, pp. 128-9, Finding 5, supra):

[fol. 2457]

	Intrastate		Intrastate exchange	
	Excess of plaintiff's showing		Excess of plaintiff's showing	
	Over recorded charges	Over allowance by 1920 order	Over recorded charges	Over allowance by 1920 order
1923	$1,440,639	$2,981,053	$1,384,175	$2,852,322
1924	1,912,269	3,235,315	1,812,949	3,077,287
1925	1,720,605	3,196,136	1,639,350	3,045,275
1926	1,449,756	3,092,901	1,367,920	2,932,410
1927	1,273,888	3,015,624	1,191,387	2,844,777
1928	972,043	2,891,817	889,806	2,705,114
1929	712,048	2,556,086	609,695	2,341,595
1930	716,346	2,663,528	616,734	2,433,515
1931	801,339	2,808,145	701,017	2,568,626

Part II

Depreciation Allowance Fixed by 1923 Order

7. That the allowance for depreciation prescribed by the 1923 Order is (Defendants' Brief, p. 593):

Year	Intrastate	Intrastate exchange
1923	$2,477,582	$2,361,524
1924	3,050,327	2,914,929
1925	3,489,478	3,324,823
1926	3,582,203	3,410,683
1927	3,513,803	3,335,412
1928	3,506,518	3,315,818
1929	3,549,928	3,334,828
1930	3,886,422	3,626,025
1931	4,914,865	4,574,439

[fol. 2458] 8. That the decrease in depreciation allowance of the 1923 Order under the allowance of the 1920 Order is (Defendants' Brief, p. 593):

Year	Intrastate	Intrastate exchange
1923	$191,030	$182,081
1924	83,131	79,441
1925	68,476	65,245
1926	526,668	501,451
1927	1,062,695	1,008,744
1928	1,571,038	1,485,598
1929	2,030,809	1,907,757
1930	2,019,758	1,884,431
1931	1,199,464	1,116,384

9. That the excess of recorded depreciation charges and of the depreciation charges included in plaintiff's showing of intrastate and exchange service net income available for return from the telephone rates prescribed by the 1923 Order is (Plaintiff's Brief, pp. 128-9, Finding 7, supra):

	Intrastate		Intrastate exchange	
	Excess of recorded charges	Excess of plaintiff's showing	Excess of recorded charges	Excess of plaintiff's showing
	Over allowance by 1923 order		Over allowance by 1923 order	
1923	$1,743,933	$3,184,572	$1,661,524	$3,045,699
1924	1,419,563	3,331,832	1,356,256	3,169,205
1925	1,558,535	3,279,140	1,484,306	3,123,656
1926	2,185,169	3,634,925	2,079,850	3,447,770
1927	2,820,777	4,094,665	2,676,577	3,867,964
1928	3,502,547	4,474,590	3,311,210	4,201,016
1929	3,886,552	4,598,960	3,650,647	4,260,342
1930	3,978,350	4,694,696	3,711,143	4,327,877
1931	3,218,424	4,019,763	2,994,367	3,695,384

[fol. 2459] 10. That this Court, in determining for itself what would be earned under the attacked telephone rates, must treat with the respect to be attached to a legislative act, the State's judgment expressed in the 1923 Order, on the amount of depreciation charges to be covered by such telephone rates and to be charged and recorded against the gross income produced by them (Defendants' Brief, p. 497).

11. That the presumption of law is in favor of the validity of the 1923 Order on depreciation (Defendants' Brief, pp. 497, 503).

12. That plaintiff has failed in the following respects to establish its burden of proof that the depreciation allowance fixed by the 1923 Order was constitutionally inadequate (Defendants' Brief, p. 503):

(a) Plaintiff is not constitutionally entitled to recover through its telephone service rates as operating expenses during the period 1923-1931, annual advance contributions for anticipated depreciation on contemplated future additions to buildings and central office equipment under the three following conditions under which it operated in respect thereto:

(1) As plaintiff made no provision whatever at the date of such annual advance contributions to assure that such contemplated future additions will, in fact, be acquired, and be placed in the future service (Defendants' Brief, p. 520).

(2) As the acquisition and placing of the contemplated future additions in the future service is within the sole and uncontrolled discretion and power of plaintiff (Defendants' Brief, p. 521).

(3) As plaintiff made no provision whatsoever at the date of such annual advance contributions to assure that to the [fol. 2460] extent that plaintiff does not in fact acquire and place in the future service such contemplated future additions, it will account to its telephone users for the amount of such advance contributions and for all earnings thereon applicable thereto (Defendants' Brief, p. 520).

Plaintiff's showing of depreciation expense in each of the years 1923 to 1931, inclusive, included in each year

advance contributions for anticipated depreciation on contemplated future additions to buildings and central office equipment (Defendants' Brief, p. 515).

The contemplated future additions for manual central office buildings on December 31, 1929, was $5,995,000, all to be retired by 1984, and the undepreciated book investment in manual central office buildings on the same date was $5,775,086; on December 31, 1929, the undepreciated book investment in manual central office equipment was $31,081,262, and the contemplated future additions thereon aggregated $11,563,000, all to be retired by 1944. The record does not show the amount of contemplated future additions on dial central office buildings and equipment, nor does it show the amount of contemplated future additions on manual central office buildings or equipment for any other years (Defendants' Brief, p. 517).

The record does not show, nor is it possible to determine, what portion of the depreciation expense charges on buildings and central office equipment is represented by advance contributions for anticipated depreciation on contemplated future additions (Defendants' Brief, p. 516).

The inclusion in the depreciation expense charges in violation of law of advance contributions for contemplated [fol. 2461] future additions on central office equipment and buildings destroys the probative value of the entire depreciation expense charges on buildings and central office equipment, and destroys the possibility of using plaintiff's showing in respect thereto as a basis to determine the invalidity of the depreciation allowance fixed by the 1923 Order. The depreciation expense charges on buildings and central office equipment represented in each year such portion of the total depreciation expense charges that the effect of excluding from consideration such expense charges destroys the possibility of plaintiff's sustaining its burden to have the 1923 Order on depreciation constitutionally inadequate (Defendants' Brief, p. 504):

Year	Depreciation expense charges recorded on books: Total (acct. 608) (A-127) (1)	Buildings & C. O. equip. (X-176) (2)	Ratio of col. (2) to col. (1) (3)	Decrease in allowance of 1923 order under 1920 order: Amount (4)	Ratio of col. (2) to col. (4) (5)	Excess of recorded charges over allowance of 1920 order: Amount (6)	Ratio of col. (2) to col. (6) (7)
1923	$4,480,954	$2,234,177	50%	$203,375	986%	$1,639,889	136%
1924	4,709,950	2,223,132	47	87,858	2530	1,398,326	159
1925	5,385,712	2,475,699	46	73,268	3379	1,578,785	157
1926	6,203,022	2,913,526	47	567,959	513	1,772,017	164
1927	6,839,392	3,208,885	47	1,150,352	279	1,885,400	170
1928	7,641,461	3,491,328	46	1,715,669	204	2,096,461	167
1929	8,120,382	3,840,800	47	2,221,163	173	2,016,546	190
1930	8,769,886	4,203,213	48	2,255,453	186	2,174,487	193
1931	9,146,268	4,445,298	49	1,350,900	329	2,259,987	197
Totals and averages	$61,297,027	$29,306,058	47%	$9,625,997	302%	$16,821,898	173%

There is no connection between the principle of applying the group plan of depreciation accounting to buildings and central office equipment and the principle that plaintiff is entitled to include as part of its depreciation charges advance contributions for anticipated depreciation on con- [fol. 2462] templated future additions (Defendants' Brief, p. 586).

Plaintiff's use of the straight line method to compute annual advance contributions for anticipated depreciation on contemplated future additions precludes the possibility of using the reproduction value of the property in service as a base for the computation of the amounts thereof (Defendants' Brief, p. 571).

(b) That plaintiff failed to recompute the composite depreciation rate for buildings and central office equipment during the period under investigation, although new buildings and offices were added or retired, and additions were made to existing buildings and central offices (Defendants' Brief, p. 578).

(c) That plaintiff's method of computing the average life of aerial cable, underground cable, pole lines and non-multiple private branch exchange is erroneous and the average life so determined is from 9 per cent to 15 per cent too short, and the depreciation rates are accordingly too high (Defendants' Brief, p. 589).

(d) That no issue can arise in respect to the inadequacy in the years 1923, 1924 and 1925 of the depreciation allow-

ance fixed by the 1923 Order as plaintiff's experience reveals that such allowance was substantially the same in each of such years as the depreciation allowance fixed by the 1920 Order as shown in Finding 8 above (Defendants' Brief, p. 592).

(e) That the fact of the excess in the years 1928-1931 of the actual losses realized from retirements over the amount of depreciation allowance of the 1923 Order has little probative value, as evidence that the 1923 Order on depreciation was constitutionally inadequate. Special non-[fol. 2463] recurring conditions prevailed in such years (Defendants' Brief, p. 594).

(f) That plaintiff included as part of its current depreciation expense, charges for depreciation on property which had already been written out of its plant account (Defendants' Brief, p. 607).

13. That the proper interpretation of the 1923 Order on depreciation is that the combined allowance for maintenance and depreciation in each of the years 1923 to 1931, inclusive, shall be computed by applying a ratio of 9.18% to the property in service at December 31, 1922, less all retirements made thereafter and a rate of 8.75% on all gross additions made thereafter (Defendants' Brief, p. 612.)

14. That the decision of the Supreme Court in United Railways & Electric Company v. West, 280 U. S. 234, is rendered inapplicable in the determination of the proper method of computing depreciation expense charges of plaintiff's depreciable property throughout the use by plaintiff of the group basis of depreciation treatment and the inclusion of advance contributions for anticipated depreciation on contemplated future additions; through the use by plaintiff of depreciation accumulations to reimburse itself for its investment in property in service and not to provide for replacements thereof; through the use by plaintiff of long lived property in service whose replacement value cannot be assumed to be "for all purposes" "present value"; and through the use by plaintiff of spot prices as synonymous with fair value of its property (Defendants' Brief, p. 619).

[fol. 2464] License Contract Payments

15. That the fair rental for telephone instruments allocable to the Chicago Division in the years 1923 to 1927, is (Defendants' Brief, pp. 91-2):

1923	$187,260
1924	223,320
1925	261,149
1926	236,165
1927	237,777

To cover:

(a) Actual maintenance:

1923	$71,661
1924	86,325
1925	104,841
1926	132,126
1927	136,328

(b) Taxes paid:

1923	$41,651
1924	52,802
1925	61,824
1926	1,540

(c) Depreciation expense charges—as charged by American Company:

1923	$140,705
1924	155,306
1925	172,036
1926	189,715
1927	207,841

(d) Less credit of an equal amount to undo the illegal and discriminatory burden on plaintiff's telephone service charges for the unjust enrichment of the American Com-
[fol. 2465] pany resulting from plaintiff's purchase of the telephone instruments from the American Company on December 31, 1927.

That plaintiff's purchase on December 31, 1927, of the telephone instruments from the American Company created an illegal and discriminatory burden on plaintiff's telephone service charges in Chicago, for the unjust enrich-

ment of the American Company, in an amount in excess of $865,000 (Defendants' Brief, p. 23).

That plaintiff recorded the purchase of the telephone instruments as of December 31, 1927, as part of its Station Apparatus Account in which was recorded a large investment in station apparatus other than instruments. Beginning with 1928 the depreciation rate applied to the entire account was increased due in part to the recording of the instruments as a part thereof. It is impossible to determine how much of the increase in the depreciation expense charges of the entire account is applicable to telephone instruments; this accounting procedure renders impossible any adjustments for the period subsequent to December 31, 1928, adequate to offset the illegal and discriminatory burden on the telephone service charges in Chicago arising from the sale (Defendants' Brief, pp. 23, 593).

That substantial offset to the illegal and discriminatory burden on the telephone service charges in Chicago and to the unjust enrichment of the American Company resulting from the sale of the telephone instruments as of December 31, 1927, may be made through an adjustment by way of credit against instrument rental allowances for the period 1923 to 1927, inclusive, measured by the amount of the claimed depreciation expense charges on the instruments for these years.

[fol. 2466] (e) Return equal to cost to American Company of carrying investment in telephone instruments (A-166; Defendants' Brief, p. 55):

1923	$73,948
1924	84,193
1925	94,484
1926	102,494
1927	101,389

16. That all expenses of the Department of Operation and Engineering allocated by plaintiff to Chicago are allowed as part of the costs of the License Contract Services to be charged by plaintiff as an operating expense, to cover the work of that department together with such other work of the other departments not otherwise compensated for (Defendants' Brief, pp. 405,435):

1923	$157,340
1924	161,066

1925	177,718
1926	197,583
1927	212,344
1928	299,449
1929	240,601
1930	244,652
1931	238,958

17. That the expense of the class of work of the Department of Development and Research, concerned with the protection of telephone and telegraph plant from inductive interference from neighboring trolley wires, high tension circuits, electrolysis and lightning, allocable to Chicago, is allowed as part of the License Contract services to be charged by plaintiff as an operating expense (Defendants' Brief, pp. 140, 435):

[fol. 2467]

1923	$7,381
1924	9,709
1925	10,237
1926	15,898
1927	31,674
1928	33,929
1929	33,957
1930	32,451
1931	28,139

18. That the expenses covering the cost of giving advice to the Licensee Companies and to the Long Lines in their Treasury Department work allocated by plaintiff to Chicago are allowed as part of the costs of the License Contract services to be charged by plaintiff as an operating expense (Defendants' Brief, p. 435):

1923	$564
1924	668
1925	999
1926	1,148
1927	2,059
1928	1,598
1929	1,841
1930	2,133
1931	2,110

19. That plaintiff has adequately compensated the American Company for any services actually rendered to it under the License Contract and not otherwise compensated for in the above Findings 15 to 18, inclusive, by the following services rendered by plaintiff to the American Company without being adequately compensated therefor (Defendants' Brief, p. 407):

(a) Plaintiff's financing of the Central Union properties to liquidate frozen assets of American Company and to [fol. 2468] relieve it of incurring losses in connection therewith (Defendants' Brief, p. 409).

(b) Plaintiff's assistance to American Company in the sale of the American Company's stock (Defendants' Brief, p. 416).

(c) Losses to plaintiff resulting from the American Company's method of financing the licensee companies (Defendants' Brief, p. 425).

(d) Plaintiff's surrender of its right under Section 10 of the Original License Contract of 1881 to participate in the receipts and profits of the long distance business in Chicago as part consideration for the present license contract arrangement (Defendants' Brief, p. 430).

20. That in addition to the above credits, as shown in Finding 19, the total amount of the license contract payments which are properly chargeable and are allowed as an operating expense (the total of Findings 15 to 18, inclusive), in each year, is (Defendants' Brief, p. 435):

	Chicago division	Chicago intrastate	Chicago intrastate exchange
1923	$352,545	$343,026	$327,867
1924	394,763	382,841	364,721
1925	450,103	435,070	412,339
1926	450,794	433,979	408,464
1927	483,854	464,258	435,565
1928	264,976	251,261	235,166
1929	276,399	250,417	233,640
1930	279,236	252,066	235,033
1931	269,207	243,632	227,615
Total	3,221,877	3,056,550	2,880,410

[fol. 2469] 21. That the difference between the amount paid by the plaintiff and charged as an operating expense under existing rates each year and the amount properly chargeable is (Defendants' Brief, p. 437):

Years	Chicago division	Chicago intrastate	Chicago intrastate exchange
1923	$1,371,706	$1,318,988	$1,230,692
1924	1,465,675	1,404,254	1,303,492
1925	1,537,432	1,465,999	1,349,801
1926	1,485,084	1,411,592	1,286,883
1927	1,601,866	1,516,622	1,376,580
1928	839,917	785,355	708,860
1929	654,897	583,859	523,432
1930	688,986	612,065	547,768
1931	662,445	590,567	531,214
Total	10,308,008	9,689,301	8,858,722

22. That giving effect to the reduction in revenue by the reduction in telephone rates prescribed by the 1923 Order, the net difference between the amount properly chargeable as an operating expense and the license contract payment in each year is (Defendants' Brief, p. 435):

[fol. 2470]

	Chicago division	Chicago intrastate	Chicago intrastate exchange
1923	$1,346,960	$1,294,242	$1,205,946
1924	1,367,345	1,305,924	1,205,162
1925	1,440,965	1,369,532	1,253,334
1926	1,394,160	1,320,668	1,195,958
1927	1,513,914	1,428,670	1,288,628
1928	796,303	741,741	665,246
1929	621,205	550,167	489,740
1930	655,947	579,026	514,729
1931	629,445	557,567	498,214
Total	9,766,244	9,147,537	8,316,958

23. That prior to the execution of the 1919 License Contract, the American Company had already reduced the plaintiff to a mere department of an integrated single organization, of which the American Company was the head, operating the properties and personnel of the plaintiff without limitation in the administration of its affairs arising from

legal restraints incident to the separate and distinct corporate existence of plaintiff; that the 1919 License Contract was the action of the American Company, prescribing the functional operations of the American Company and the plaintiff in their relation to each other and to the other licensees in the rendering of this nation-wide unified telephone service and was the action of the American Company in prescribing the yearly uniform assessment to be paid by the plaintiff as determined by the American Company to maintain outside its territory the operations of the American Company as the headquarters department functioning for the Bell System as a whole (Defendants' Brief, pp. 433, 1071).

[fol. 2471] 24. That the reduction in license contract payments in 1926 from 4½ per cent to 4 per cent (in consideration of which the plaintiff was required to pay the property taxes on telephone instruments, which theretofore the American Company was paying), the reduction from 4 per cent to 2 per cent at the time of the sale of the telephone instruments in 1927, and the reduction from 2 per cent to 1½ per cent at the beginning of 1929, were made during the period of the following increasingly large profits which the American Company derived from its operations with the Licensee Companies:

(a) In the years 1923 to 1930, inclusive, the American Company increased, through purchase, its stock investment in the Licensee Companies from $643,645,207 in 1922 to $1,720,202,857; during this period the yield to the American Company on such investments increased, while its cash cost of producing funds to make the investment decreased as follows (Defendants' Brief, pp. 343-4):

	Yield to American Company in stock holdings in licensees	American Company's cost of funds
1922	6.43%	6.90%
1923	6.65%	6.87%
1924	6.97%	6.85%
1925	7.03%	6.93%
1926	7.35%	6.83%
1927	7.39%	6.86%
1928	7.48%	6.55%
1929	7.48%	6.53%
1930	7.26%	6.25%

as a result of the increase in yield to the American Company on its stock investment, the decrease in cost of funds to purchase the stock and the large increase in stock pur-[fol. 2472] chases by the American Company during the period of decrease in its own cost of procuring funds, the American Company was able to pay from its dividends on its stock investment in the Licensee Companies, its expenses allocated by it to Holding Company operations, interest and amortization on credit obligations, its regular dividend on its capital investment in such securities, and to accumulate a progressively larger surplus, as follows (Defendants' Brief, pp. 343-4):

1926	$4,353,558
1927	4,895,088
1928	11,309,069
1929	12,444,626
1930	15,095,258

(b) During this period the inventions resulting from the work of the Department of Development and Research (the cost of which was charged to the Licensee Companies), and embodied in the by-products used in non-telephone fields yielded to the American Company progressively larger royalties each year, which cash royalties, beginning with the year 1926, were (Defendants' Brief, p. 145):

1926	$260,981
1927	540,427
1928	505,893
1929	1,233,101
1930	1,295,655
1931	1,135,555

in addition to which cash royalties the American Company was entitled, under royalty contracts, to receive additional royalties for a long period of years beyond 1931, all of which royalties and rights the American Company retained (Defendants' Brief, 160, et seq.).

[fol. 2473] (c) During this period the American Company received progressively larger amounts of cash dividends on the bonus stock, which it had received in consideration for the license given to the Western Electric to sell to the Licensee Companies, including plaintiff, apparatus embodying

the inventions resulting from the development and research work of the American Company, which cash dividends were (Defendants' Brief, p. 284):

1923	$244,900
1924	244,900
1925	275,512
1926	367,350
1927	2,755,155
1928	551,025
1929	918,375
1930	734,700

(d) The return to the Western Electric from its Bell and non-Bell business during the period 1926 to 1930, inclusive, related to capital and surplus, was (Defendants' Brief, p. 781):

1926	22.38%
1927	26.13%
1928	30.27%
1929	25.53%
1930	7.45%

that the division of such profits between Bell and non-Bell business is impossible of determination with accuracy, as plaintiff failed to present the facts necessary for a proper distribution of the Western Electric through expenses and/or investment between Bell and non-Bell operations (Defendants' Brief, pp. 783, 817, 838).

(e) The American Company's return on its capital and surplus, resulting from the cash dividends received from [fol. 2474] the Western Electric, increased as follows (Defendants' Brief, p. 1076):

1923	9.94%
1924	10.06
1925	11.71
1926	15.97
1927	127.16
1928	23.76
1929	35.65
1930	19.47

Included in the above return is a cash dividend from the Western Electric in the sum of $47,935,585 on December 31, 1927, a large portion of which cash dividend represented earnings resulting from the Western Electric's operations with the Licensee Companies or from operations the expenses of which were charged to the Licensee Companies (Defendants' Brief, pp. 195, 247).

(f) The American Company, as the operator of the Long Distance services, making use of the exchange plant facilities of the Licensee Companies, including the plaintiff, without compensating the plaintiff for the uses of its Chicago exchange plant facilities, earned in said Long Distance service the following returns on its capital and surplus allocable to said Long Lines business (Defendants' Brief, p. 247):

1922	21.00%
1923	18.95
1924	16.99
1925	19.70
1926	17.17
1927	14.27
1928	14.66
1929	13.53
1930	8.51

[fol. 2475] in connection with which showing consideration must be given to the fact that the Long Lines plant investment is built in advance of and to provide for increased business five years ahead of requirements, and to the fact that the per cent of increase of the Long Lines average investment in fixed capital, material and supplies, from 1926 to 1930, was 139.7 per cent over the investment in 1926 (Defendants' Brief, p. 245).

(g) That in the fall of 1927, the American Company sold to the Licensee Companies, including plaintiff, the telephone instruments which it had theretofore rented to them under the license contract, at a profit to it of $14,395,000 (Defendants' Brief, p. 24).

25. That Account 527 of the Accounting Rules of the Interstate Commerce Commission and of the Illinois Com-

merce Commission does not by its terms cover license contract payments to include all the services enumerated in the 1919 License Contract (Defendants' Brief, p. 119).

26. That plaintiff's showing of the amount which it would have cost it to procure from any source other than the American Company the same or similar services as those which it claimed were rendered by the American Company was an unfair presentation; an allowance based on plaintiff's showing of $709,000 as the required amount to maintain its own instruments in 1923 would be sufficient to cover the actual maintenance, depreciation expense charges, and taxes as claimed by the American Company for 1923, plus a return of 39.02 per cent on its current investment in instruments in service (Defendants' Brief, p. 84).

[fol. 2476] Separation of Revenues

27. That plaintiff's showing of intrastate and intrastate exchange net income received under the existing rates, or to be received under the rates in suit, allocated to intrastate toll and to interstate toll a portion of the net revenues arising under the rates fixed for exchange service in the following amounts (Defendants' Brief, pp. 633, 725):

Under Present Rates
Net Amount of Chicago Exchange Service revenues allocated to

	Intrastate toll service	Interstate toll service	Total allocated to toll services
1923	$482,231	$260,614	$742,845
1924	547,619	278,223	825,842
1925	627,685	327,430	955,115
1926	739,755	335,599	1,075,354
1927	833,826	373,025	1,206,851
1928	970,292	448,464	1,418,756
1929	1,098,525	508,729	1,607,254
1930	1,125,953	492,965	1,618,918
1931	991,800	448,700	1,440,500

Under Rates in Suit
Net Amount of Chicago Exchange Service revenues allocated to

	Intrastate toll service	Interstate toll service	Total allocated to toll services
1923	$453,442	$245,042	$698,464
1924	516,439	262,398	778,837
1925	593,274	309,505	902,779
1926	700,718	317,915	1,018,633
1927	792,111	354,372	1,146,483
1928	925,205	427,655	1,352,860
1929	1,051,292	486,857	1,538,167
1930	1,079,128	472,469	1,551,597
1931	954,223	431,580	1,385,803

28. That plaintiff's allocation of exchange service revenues disregarded the findings of fact by this Court in its opinion of January 31, 1930, and the findings of fact [fol. 2477] and direction by the Supreme Court in its opinion of December 1, 1930, and the orders establishing the exchange service rates from which such revenues were collected (Defendants' Brief, pp. 641, 646).

29. That plaintiff presented no evidence and that there is no evidence in the record that the Chicago exchange service rates ever compensated plaintiff for the unlimited interstate and intrastate uses of its Chicago exchange plant facilities by the users of the interstate and intrastate toll services including the services of the American Company and other connecting companies and its own interstate and intrastate toll services (Defendants' Brief, p. 653).

30. That plaintiff's claim that the Chicago exchange service and exchange rates compensated it for the intertsate and intrastate uses of the Chicago exchange plant facilities by the users of the interstate and intrastate toll services is contrary to the basis upon which its Chicago exchange service and Chicago exchange service rates have been built up and were established and in force during its history, including the period under investigation (Defendants' Brief, p. 659).

31. That the compliance with the requirements of the Illinois Public Utilities Act and of the Illinois Commerce Commission law necessary as a condition precedent to making applicable to the Chicago exchange service rates (a) the

1919. License Contract covering the use in the American Company's services (interstate and intrastate) of the Chicago exchange plant facilities; (b) the 1925 and the 1926 revisions of the intrastate toll rate schedules covering the use in the intrastate toll service of the Chicago exchange plant facilities; and (c) the 1926 and 1929 revisions of the [fol. 2478] connecting company contracts covering the use in the intrastate toll service of the Chicago exchange plant facilities, was not in each case made (Defendants' Brief, pp. 717, 723-4).

32. That in determining the intrastate and intrastate exchange net incomes, respectively, derived from the existing rates, or to be derived from the attacked rates, there should be reallocated to exchange service earnings the amounts shown in Findings 1, 2, 27 (Defendants' Brief, pp. 633, 725).

33. That plaintiff's showing of Rate of Return from intrastate exchange and intrastate toll services on the basis of plaintiff's showing of rate base expressed in terms of book cost and fair value as set forth in Plaintiff's Exhibit A-53, after restoring to the Exchange Service Revenue, that portion thereof which plaintiff illegally allocated to intrastate toll service, is as follows:

Rate of Return

(Computed from Ptf. Exh. A-53; Def. Exh. X-264-270-B)

	Return on average book cost, intrastate		Return on reproduction cost new less depreciation, intrastate	
Year	Exchange	Toll	Exchange	Toll
1923	6.31%	2.96%	4.04%	1.88%
1924	6.39	3.91	4.21	2.56
1925	6.04	5.57	4.14	3.80
1926	5.55	6.83	4.00	4.90
1927	5.18	6.23	3.91	4.69
1928	5.33	5.76	4.15	4.46
1929	6.50	4.11	5.09	3.20
1930	5.71	2.32	4.47	1.80
1931	5.05	.77	4.02	.61

[fol. 2479] That plaintiff voluntarily reduced its intrastate toll rates on February 1, 1929, by an estimated

amount of $62,000 per year, and on January 1, 1930, by an estimated amount of $262,000 (X-352, 1930, p. 6).

That plaintiff's failure to include as part of the intrastate toll service rates the cost of the intrastate uses of the Chicago Exchange plant facilities and its voluntary reduction in intrastate toll rates in the face of the Rate of Return which plaintiff claimed was received by it from such service are inconsistent with plaintiff's position in respect to the minimum return to which it claims it is constitutionally entitled from the intrastate and interstate exchange services, and is convincing evidence that its prognosticated minimum return is at variance with its experience.

[fol. 2480] Valuation.

The issues in respect to Valuation are:

(a) Western Electric Profits and Prices.

(b) Depreciation in Valuation.

(c) Value of Property in Service for Rate-Making Purposes.

Western Electric Profits and Prices

34. That Western Electric profits and prices enter into the following issues of confiscation:

(a) Valuation:

Plaintiff's showing on valuation applied the spot Western Electric price on December 31 of each of the years 1923-1931 and the spot Western Electric price for June 30, 1923, to measure the difference between the value of the plant in 1911 plus the book cost of gross additions and retirements for each of the years beginning with 1912 to the date of each revaluation. Plaintiff then assumed that such application would produce the fair value new of the property as of the date of revaluation.

On such showing the Western Electric's prices enter into the reasonableness of the book cost and the reasonableness of the spot prices used in connection with such valuation (Defendants' Brief, pp. 795, 908).

(b) Expense of Depreciation:

Plaintiff's showing of the proper current depreciation allowance in each of the years 1923-1931, was computed on the

[fol. 2481] basis of the current value of the depreciable property through the application of a depreciation rate to the current undepreciated reproduction value new of such property built as above stated on spot Western Electric prices in each year of revaluation (Defendants' Brief, p. 795).

(c) Maintenance:

Substantial amounts of Western Electric purchases each year were used for current maintenance (Defendants' Brief, p. 796).

(d) Rate of Return:

The American Company as the investor in plaintiff provided capital to purchase Western Electric manufactures. The American Company acted as the purchasing agent for plaintiff and as selling agent for the Western Electric. The American Company received royalties from the Western Electric as consideration for the promotion contract to Western Electric to sell its products to the Licensee Companies, including plaintiff. The American Company as the principal investor in the Western Electric received earnings on its investment from the Western Electric. The profits to the American Company from its relationship to Western Electric enter into the consideration of the extent to which the American Company's investment in plaintiff is made to receive therefrom only the return of ordinary investors and of the extent to which the capital is attracted to plaintiff from the American Company on the basis of the standard of the Bluefield Case (Finding 70).

35. That on plaintiff's own showing the Western Electric's rate of return from Bell business during the years 1924 to 1930 was excessive (Defendants' Brief, p. 734).

[fol. 2482] In arriving at "Average Investment" there should be deducted from plaintiff's showing:

(a) Notes payable to others and Trustee of Pension Fund (Defendants' Brief, p. 738);

(b) Reserves for Pension Fund (Defendants' Brief, p. 747);

(c) Working Reserves (Defendants' Brief, p. 748);

(d) Excess Cash (Defendants' Brief, p. 748);

(e) Amounts shown in Reserve for Depreciation (Defendants' Brief, p. 750).

In arriving at "Profits," there should be:

(a) Redistributed excess Pension Fund Accruals appropriated in the years 1925, 1926, 1927, 1928 and 1929 over the years prior to 1925 in which the deficiency existed as the difference between the actual accruals and the accruals shown on an actuarial basis made by the Western Electric (Defendants' Brief, p. 754);

(b) Deducted extraordinary depreciation on buildings and machinery for the years 1924 to 1927 (Defendants' Brief, p. 757);

(c) Deducted extraordinary depreciation of machinery in 1928 (Defendants' Brief, p. 766);

(d) Deducted excessive depreciation on Tools, Furniture and Fixtures (Defendants' Brief, p. 767);

(e) Deducted interest on current obligations which plaintiff failed to deduct and which should be deducted in arriving at "Average Investment" (Defendants' Brief, p. 768);

(f) Deducted interest on Excessive Cash Balances (Defendants' Brief, p. 768);

[fol. 2483] (g) Redistributed Federal Income Tax over the years in which earnings were made in respect to which the taxes were paid (Defendants' Brief, p. 769).

The net effect of the adjustments to "Average Investment" and "Profits" on plaintiff's showing, and plaintiff's showing of Rate of Return from combined Bell and non-Bell sales and from Bell and non-Bell separately are for each of the years 1916 to 1930, inclusive, as follows (Defendants' Brief, pp. 735-6):

	Rate of return combined sales	
	Plaintiff's showing (X-48), A-77 & A 79 combined	Adjusted showing (X-55)
1916	6.5%	9.2%
1917	7.0%	10.3%
1918	6.4%	7.9%

	Rate of return combined sales	
	Plaintiff's showing (X-48), A-77 & A 79 combined	Adjusted showing (X-55)
1919	5.8%	7.1%
1920	5.8%	7.5%
1921	5.6%	6.0%
1922	5.7%	5.7%
1923	6.0%	6.3%
1924	7.4%	11.1%
1925	8.4%	15.7%
1926	8.3%	16.4%
1927	10.2%	19.7%
1928	11.3%	21.3%
1929	10.3%	20.4%
1930	4.5%	6.5%

	Rate of return			
	Bell sales		Non-Bell sales	
	Plaintiff's showing (A-77)	Adjusted showing (X-55)	Plaintiff's showing (A-79)	Adjusted showing (X-55)
1916	4.6%	6.3%	13.3%	19.8%
1917	3.8	5.5	19.5	31.0
1918	3.4	3.8	15.6	21.9
1919	3.8	4.4	11.7	17.0
1920	4.9	6.0	9.2	15.0
1921	8.9	11.1	9.8*	36.4*
1922	5,2	5.0	9.7	12.8
1923	4.7	4.4	15.2	25.1
1924	6.9	10.3	11.6	18.6
1925	10.0	17.0	3.1*	5.8
1926	7.8	15.6	13.7	28.3
1927	10.1	19.6	11.6	22.1
1928	10.7	20.3	17.0	32.7
1929	8.5	17.2	24.2	44.3
1930	4.3	6.2	6.6	10.4

Plaintiff's showing of the per cent return on capital stock and surplus allocable to Bell and non-Bell business is as follows (Defendants' Brief, p. 779):

---

* Red.

	% return on capital stock and surplus		
	Total	Non-Bell	Bell
1926	16.52	27.46	15.68
1927	22.01	25.29	21.80
1928	26.36	39.93	25.08
1929	23.40	55.01	19.44
1930	8.44	12.55	8.15

That the plaintiff's showing of the Rate of Return from Bell and non-Bell business, after giving effect to defendants' adjustments, is as follows (Defendants' Brief, p. 781):

[fol. 2485]

	% return on capital stock and surplus		
	Total	Non-Bell	Bell
1926	22.38	33.48	21.53
1927	26.13	29.47	25.90
1928	30.27	43.78	29.00
1929	25.53	56.93	21.48
1930	7.45	11.50	7.17

The Rate of Return from Bell business and from non-Bell business is grossly excessive (Defendants' Brief, p. 782).

The grossly excessive Rate of Return from the non-Bell business is convincing evidence of the failure by plaintiff to make proper distribution of the Western Electric expenses and/or investment between the Bell and non-Bell operations (Defendants' Brief, p. 782).

36. That plaintiff's showing of the Western Electric's profits allocated between Bell and non-Bell operations failed to give effect to all non-Bell sales which received the benefits of the Western Electric's development and research work, covered by its operating expenses; that among these sales are:

(a) Sales in foreign countries other than in Canada by International Western Electric from its own factories of telephonic appliances, using Western Electric's inventions (Defendants' Brief, p. 840);

(b) Sales in Canada by Northern Electric Company, Ltd., from its own factories of telephonic appliances, using Western Electric's inventions (Defendants' Brief, p. 842);

(c) Sales in foreign countries by International Standard Electric from its own factories of telephonic appliances using Western Electric's invention (Defendants' Brief, p. 844);

[fol. 2486] (d) Sales by the Automatic Electric Company (Defendants' Brief, p. 846);

(e) Sales by the Graybar Electric (Defendants' Brief, p. 849);

(f) Sales by the Electric Research Products, Inc. (Defendants' Brief p. 850).

37. The Western Electric's sales prices of its manufactured products, during the period 1916-1931, inclusive, were based on standard costs which are assumed material and labor costs which remain constant for many years and assumed overhead costs which have no relation to the conditions under which the products are manufactured. The Western Electric prices since 1925 have been based on copper and lead prices fixed as standard in 1925, and since 1929 on labor costs fixed as standard in the spring of 1929 (Defendants' Brief, p. 786).

The variations in each of the years 1916-1931, inclusive, between the actual and standard costs of production of the entire product were substantial. For the entire period the variations which increased cost were $163,873,000 and the variations which decreased cost were $109,415,000 (Defendants' Brief, p. 792).

The Total Dollars of variations between the actual and standard costs of the entire production represent corresponding variations in the sales prices of products sold to any one customer or to a group of customers and a corresponding variation in the net profits (subject to income tax) of Western Electric on the products sold to such one customer or customers (Defendants' Brief, p. 794).

The distribution by plaintiff of the $273,288,000 variations between the actual and standard costs of entire pro- [fol. 2487] duction for the years 1916-1931 on the basis of standard costs of sales for the purpose of showing the current costs of sales before interest and expenses of Bell and non-Bell sales, considered as separate units, and their distribution on the basis of sales for the purpose of showing the current cost of sales before interest and expenses of sales to

the Bell System as a unit and to plaintiff considered separately, is based in each case on assumptions of facts which were not proved (Defendants' Brief, p. 808).

38. That plaintiff's distribution of Development and Research expense, General Expense, and plant facilities between Bell and non-Bell business on the basis of standard cost of sales is based on assumptions of fact which were not proved (Defendants' Brief, p. 817; N. R. II, 385).

39. That it is impossible to determine from the record the costs of Western Electric manufactures to plaintiff and the profits of the Western Electric from its sales of such manufactures for any of the years in question or the extent to which the Western Electric profits are excessive. It is impossible to allocate in any given year such excesses as are found to exist in the profits of the Western Electric. It is impossible to determine the extent to which such excess profits increased in any given year the maintenance and depreciation expenses of plaintiff and the value of plaintiff's property.

40. That the consequences of the use by the Western Electric of standard costs as a factor in establishing prices of manufactured products sold to the Bell System are that (a) Western Electric spot prices have no possible probative force as a basis for reproduction cost estimate of plaintiff's property; (b) Western Electric's spot prices do not reflect [fol. 2488] an honest and intelligent forecast of probable material and labor costs for a reasonable period in the immediate future after the date of such spot prices and have no probative force to determine fair value of the property in service to which such spot prices are applied; (c) plaintiff's showing of Western Electric's actual profits derived from the manufactures have no probative force as a basis for plaintiff's showing of the reasonableness of the Western Electric prices of manufactured products to plaintiff.

41. That plaintiff's presentation to show the reasonableness of the current Western Electric prices of Bell apparatus in any one year was predicated on the showing of the reasonableness of the profits derived from prices over a period of years. Such a showing precludes the possibility of determining the reasonableness of current Western Electric prices which are not the composite average

of all the separate prices of the period of years in which the profits were used in the showing to establish the reasonableness of Western Electric current prices. The only current price which is a composite average in any one year is the composite of the average of the Western Electric prices used to build up the investment in plant purchase from the Western Electric in a given year. As practically all of plaintiff's purchases were through the Western Electric, for that purpose such composite average prices are substantially reflected in the investment as shown in the Fixed Capital Account. Plaintiff's presentation to show the reasonableness of current Western Electric prices of Bell apparatus precludes the possibility of using current Western Electric prices as a basis for the determination of present value of plaintiff's plant account.

[fol. 2489] For the purpose of proving the reasonableness of the spot Western Electric prices by the profits of the Western Electric in each year of revaluation, it is necessary, in view of Western Electric use of standard costs as a basis for prices, to make a proper distribution of the variations in such year between the actual and standard costs of the Western Electric's entire production. Plaintiff's Western Electric showing was based upon a proper distribution over a period of years of the variations of a period of years considered as a unit. Plaintiff's showing merely shows the relation of the costs to the composite of the Western Electric prices for the entire period used by plaintiff for its proper distribution and not to the prices of any of the individual years of the period. Plaintiff's showing can be reflected only in the book cost of the Western Electric purchases during the entire period and not in the actual reproduction cost new during any one year of such period. The use of the Western Electric's standard costs as part of plaintiff's showing renders impossible of proof the reasonableness of spot Western Electric prices as a basis for determining the reproduction cost new in any one year (Defendants' Brief, pp. 797, 908-910).

Plaintiff's showing to arrive at the portion of the total Western Electric profits allocable to Bell business considered as a unit and to the component parts thereof separately, distributed the variations between actual and standard costs of entire production between Bell and non-Bell sales. Such variations gave effect to actual volume com-

pared to the estimated volume of sales of a given year. Plaintiff's showing of such an effect precludes the possibility of varying the volume of production of any item or items in any given year without varying correspondingly [fol. 2490] the effect of such changing volume on the amount and character of the adjustments. The reproduction of the property necessarily involves the purchase of a larger volume in a given year than the actual costs of sales in fact made during any one year in the period to establish the reasonableness of the prices. Plaintiff made no showing of the varying effect in the adjustments and on the profits of such increased volume in each year of the reconstruction period of each of the revaluations in each of the years under investigation. Without such showing the reasonableness of the Western Electric profits to substantiate the reasonableness of the spot prices cannot be determined as required by the Supreme Court's direction. Plaintiff's showing of the basis upon which the Western Electric engineers its manufacture precludes the possibility of using spot Western Electric prices to determine the reproduction cost new of property using Western Electric apparatus (Defendants' Brief, pp. 911-913).

Depreciation in Valuation

42. That the following represents the percentage of book cost of physical property represented by the amounts shown by

(a) Depreciation Reserve shown on plaintiff's books;

(b) The amount which would have been in the Depreciation Reserve had plaintiff complied with the 1920 Order on depreciation;

(c) The amount which would have been in the Reserve had the 1923 Order on depreciation been in effect; and

(d) The amount which plaintiff claimed represented the existing depreciation based upon inspection evidence as of [fol. 2491] December 31st of each of the years under investigation (Defendants' Brief, p. 522):

Year	Actual depreciation* reserve per plaintiff's books	Deprec. reserve* on basis of P.U.C. order of 1920	Deprec. reserve* basis of I.C.C. order of 1923	Existing depreciation claimed by plaintiff
1923	29.37%	25.09%	28.75%	9%
1924	28.94%	23.81%	27.03%	9%
1925	28.25%	22.51%	25.27%	9%
1926	28.19%	21.81%	23.86%	9%
1927	28.32%	21.30%	22.45%	9%
1928	27.98%	20.33%	20.37%	9%
1929	26.70%	18.50%	17.29%	8%
1930	26.91%	17.90%	15.60%	8%
1931	28.11%	18.15%	15.21%	8%

43. That the following represents the average depreciation reserve for the same years on the same bases as the percentages shown in Finding 42:

Average Depreciation Reserve as recorded on books (Computed from Defendants' Brief, p. 921):

Year	Intrastate exchange	Intrastate total	Total Chicago area
1923	$25,376,345	$26,554,700	$27,791,419
1924	27,977,545	29,325,045	30,764,839
1925	30,593,736	32,150,903	33,925,190
1926	33,768,966	35,583,609	37,726,473
1927	37,202,669	39,386,377	41,913,778
1928	40,162,022	42,758,448	45,873,241
1929	41,378,972	44,411,052	48,204,767
1930	42,402,101	45,790,260	50,120,687
1931	44,661,239	48,311,181	53,206,146

Average Depreciation Reserve as recorded on books raised to level of Plaintiff's Reproduction Cost (Computed from Defendants' Brief, p. 921):

*Includes Reserve for amortization of Intangible Capital.

[fol. 2492]

Year	Intrastate exchange	Intrastate total	Total Chicago area
1923	$35,451,349	$37,097,541	$38,825,265
1924	40,429,888	42,377,138	44,457,761
1925	42,357,495	44,513,416	46,969,944
1926	44,288,411	46,668,338	49,478,730
1927	46,429,665	49,154,975	52,309,221
1928	48,595,702	51,737,354	55,506,227
1929	49,464,953	53,089,540	57,624,596
1930	50,770,925	54,827,798	60,012,914
1931	52,068,256	56,323,537	62,030,327

Average Depreciation Reserve on basis of 1920 Order (Computed from Defendants' Brief, p. 921):

Year	Intrastate exchange	Intrastate total	Total Chicago area
1923	$22,204,540	$23,235,613	$24,317,753
1924	23,438,632	24,567,521	25,773,732
1925	24,750,377	26,010,127	27,445,528
1926	26,469,369	27,891,754	29,571,410
1927	28,341,073	30,004,626	31,930,006
1928	29,678,171	31,596,828	33,898,539
1929	29,334,585	31,484,102	34,173,561
1930	28,758,894	31,056,886	33,993,964
1931	29,263,320	31,654,866	34,862,187

Average Depreciation Reserve on basis of 1920 Order raised to level of Plaintiff's Reproduction Cost (Computed from Defendants' Brief, p. 921):

Year	Intrastate exchange	Intrastate total	Total Chicago area
1923	$32,951,945	$34,481,186	$36,087,060
1924	33,888,907	35,521,120	37,265,128
1925	34,280,275	36,025,079	38,013,168
1926	34,768,864	36,637,239	38,843,553
1927	35,401,853	37,479,857	39,884,918
1928	35,916,236	38,238,177	41,023,685
1929	35,093,578	37,665,091	40,882,547
1930	34,458,063	37,211,451	40,730,572
1931	34,444,899	37,259,908	41,035,143

[fol. 2493] Average Depreciation Reserve Based on 1923 Order (X-338):

Year	Intrastate exchange	Intrastate total	Total Chicago area
1923	$25,100,048	$26,248,803	$27,476,795
1924	26,735,747	28,007,019	29,392,498
1925	27,949,654	29,351,908	30,983,731
1926	29,356,603,	30,914,716	32,789,000
1927	30,445,384	32,204,666	34,288,440
1928	30,514,793	32,468,077	34,823,962
1929	28,518,005	30,583,958	33,130,569
1930	26,024,534	28,082,291	30,712,663
1931	25,035,005	27,060,466	29,777,709

Average Depreciation Reserve on basis of 1923 Order raised to level of Plaintiff's Reproduction Cost (Computed from Defendant's Brief, p. 921):

Year	Intrastate exchange	Intrastate total	Total Chicago area
1923	$35,463,296	$37,110,042	$38,838,349
1924	38,652,266	40,513,900	42,503,042
1925	38,695,513	40,665,045	42,909,196
1926	38,533,556	40,604,233	43,049,442
1927	38,004,039	40,234,785	42,816,628
1928	36,917,362	39,304,023	42,167,175
1929	33,989,326	36,479,923	39,596,139
1930	31,113,268	33,599,388	36,776,913
1931	29,440,105	31,846,099	35,072,796

44. That the portion of the depreciation reserve which represents the advance contributions made prior to and during the period 1923-1931, inclusive, for anticipated depreciation on contemplated future additions to central office equipment and buildings, should be deducted from the rate base (Defendants' Brief, p. 923).

Plaintiff's book investment in buildings and central office equipment represents the following per cent of total depreciable property (Defendants' Brief, p. 923):

[fol. 2494] 1923	41.44%
1924	40.83
1925	41.23
1926	41.47
1927	40.00

1928	41.27
1929	41.17
1930	41.36
1931	41.94

Plaintiff having invested in funds derived from the advance contributions in property placed in service, credit must be given for all income which such property produces by virtue thereof, whether the rate base is determined on the basis of book cost or reproduction value (Defendants' Brief, pp. 923-4).

As the record does not show what per cent of the depreciation reserve is represented by the cumulative advance contributions, the remainder of the depreciation reserve not covered by existing depreciation in property in service found by plaintiff, should be held to represent the advance contributions. By deducting such portion of the depreciation reserve, the same result is accomplished as by giving credit for the income on these funds reflected therein (Defendants' Brief, p. 924).

45. That plaintiff's showing of depreciation in valuation was based on inspection. The per cent condition of depreciable property in service determined by inspection, gives effect to deterioration and realized obsolescence in evidence, but excludes from consideration facts and contingencies which may not yet be manifest but which plaintiff has determined are certain of realization within the period of service life and against which plaintiff has made provision in its depreciation expense computations (Defendants' Brief, p. 926).

The per cent condition of property as of any given date pending the ultimate property retirement, even if it reflected the operation of all causes of property retirement, [fol. 2495] cuts off consideration of the balance of the period during which the causes were expected to operate to produce the property consumption reimbursed by the depreciation charges already made and covered by subscribers' rates then in force (Defendants' Brief, p. 948).

46. That the use by plaintiff of the straight line method of determining depreciation charges involves the principle that it has no right to return on the amount of property

cost, which is represented by the balance in the depreciation reserve (Defendants' Brief, p. 952).

47. That the straight line method of computing depreciation expense charges is based on the theory that plaintiff is being reimbursed by each annual depreciation charge for a portion of the total property cost which has been and will be consumed during the period of the service life (Defendants' Brief, p. 952).

48. That the straight line method of computing depreciation charges is intended to provide a fund which does not require any additional income accumuluations thereon to provide the full reimbursement of the depreciation expense to which plaintiff is entitled under the law (Defendants' Brief, p. 952).

49. That by using the straight line method of computing depreciation charges plaintiff has elected to treat the funds represented by the balance in the depreciation reserve as payment for a portion of its capital investment in the service consumed and to be consumed in respect to which it is entitled to reimbursement during the service life of the property (Defendants' Brief, p. 954).

50. That where fair value of physical property is determined on the basis of reproduction cost new as of any given [fol. 2496] date, there should be deducted from such reproduction cost new the percentage thereof equal to the percentage which the amount of the depreciation reserve is of the undepreciated book cost of such physical property as of the same date—the company receiving a return on the fair value of the property into which the funds represented by the depreciation reserve were invested (Defendants' Brief, p. 959; Galveston Elec. Co. v. City of Galveston, 258 U. S. 388, 393, Note 1).

51. That where fair value is based upon the undepreciated book cost of physical property there should be deducted from such book cost the amount of the depreciation reserve as of the same date (Defendants' Brief, p. 959).

Value of Property in Service for Rate-making Purposes

52. That plaintiff has failed to present any convincing evidence of the undepreciated value of its property in serv-

ice, which would enable this Court to assign to it any greater value new than appears on plaintiff's books for each of the years 1923-1931, inclusive (Defendants' Brief, p. 910; United Fuel Gas Co. et al. v. R. R. Commission of Kentucky, 278 U. S. 300, 318).

53. That Findings 39, 40, 41, above preclude the possibility of using Western Electric spot prices as a basis for determination of present value of plaintiffs plant account as of the date of revaluation.

Physical Plant

54. That the index numbers used by plaintiff and by it applied to book costs are uncertain and not reasonably [fol. 2497] usable to ascertain reproduction costs new (Defendants' Brief, p. 876).

55. That the index numbers used by plaintiff to adjust book costs were made by pricing out each year of the years 1911 to 1923 a constant cross-section of the plant in service on June 30, 1923 (Defendants' Brief, pp. 878, 885).

While the items and quantities of property added to plaintiff's Chicago plant each year were not constant and were not substantially a cross-section of the plant in service on June 30, 1923 (Defendants' Brief, p. 878).

56. That plaintiff's material cost index is made up by pricing out each year a constant cross-section of the plant in service on June 30, 1923, while the items and quantities actually added each year were different therefrom (Defendants' Brief, p. 877).

57. That the labor cost index used by plaintiff is inconsistent with its books and with actual labor cost trends (Defendants' Brief, p. 885).

58. That for the purpose of weighting its material and labor cost indices into the construction cost index, which it applied to the book costs, the plaintiff used proportions of material and labor which are inconsistent with its material and labor indices (Defendants' Brief, p. 894).

59. That the methods used in plaintiff's estimate of reproduction cost new preclude the possibility of attaching any probative value to them as a basis for any finding of

reproduction cost new as of the respective dates of its estimates (Defendants' Brief, p. 913).

[fol. 2498] Buildings

60. That plaintiff used the spot or current construction cost to arrive at reproduction cost new of the property but failed to make an "honest and intelligent forecast as to the probable price and wage levels during a reasonable period in the immediate future." Such reproduction cost new figures during each of the years under investigation did not and could not produce the fair value new of such physical plant and buildings within the requirements of law (Defendants' Brief, p. 914; McCardle v. Indianapolis Water Co., 272 U. S. 400).

Overheads

61. That overheads should be computed on the same basis as direct charges (Defendants' Brief, p. 916).

62. That the average undepreciated value of the plaintiff's property in Chicago (based upon undepreciated book cost, exclusive of working cash capital, material and supplies, construction work in progress and Going Value) for each of the years 1923 to 1931, is (X-338):

Year	Intrastate	Intrastate exchange
1923	$88,663,316	$84,783,048
1924	100,540,215	95,976,573
1925	112,486,829	107,112,897
1926	126,061,831	119,708,266
1927	139,205,005	131,600,492
1928	151,459,710	142,347,871
1929	162,493,935	151,517,431
1930	170,958,739	158,431,574
1931	175,710,631	162,558,785

[fol. 2499] Working Cash Capital

63. That the average amount of working cash capital to be included in the rate base for each of the years 1923 to 1931 is (X-338):

Year	Intrastate	Intrastate exchange
1923	$2,915,000	$2,750,000
1924	3,060,000	2,880,000
1925	3,225,000	3,025,000
1926	3,440,000	3,200,000
1927	3,695,000	3,425,000
1928	3,840,000	3,550,000
1929	3,975,000	3,635,000
1930	4,050,000	3,690,000
1931	3,800,000	3,450,000

Materials and Supplies

64. That the average investment of plaintiff in Chicago in materials and supplies is (X-338):

Year	Intrastate	Intrastate exchange
1923	$222,618	$212,875
1924	284,538	271,196
1925	338,324	321,892
1926	316,963	300,465
1927	306,108	288,668
1928	319,489	299,325
1929	253,664	235,475
1930	190,933	176,653
1931	203,648	188,393

Going Value

65. That the average annual amount of Going Value which should be included in the rate base, if plaintiff were to be considered as an independent enterprise apart from its relationship to the American Company as an integrated [fol. 2500] department thereof, by comparison with the allowances under similar circumstances in the case of other operating companies of the Bell System, (including the allowance for New York City) should not exceed the allowance by the 1923 Order which is (New York Telephone Company v. Prendergast, 36 Fed. (2) 54; Defendants' Brief, p. 963; X-338):

Year	Intrastate	Intrastate exchange
1923	$4,346,376	$4,156,161
1924	4,926,495	4,702,852
1925	5,511,855	5,248,532

Year	Intrastate	Intrastate exchange
1926	6,177,020	5,865,706
1927	6,821,045	6,448,425
1928	7,421,526	6,975,046
1929	7,962,203	7,424,355
1930	8,376,978	7,763,148
1931	8,609,821	7,965,380

66. That the average value of plaintiff's property in service in Chicago for each of the years 1923 to 1931, inclusive, separated as between Intrastate and Intrastate Exchange (including physical property, working cash capital, material and supplies, going value and construction work in progress), before deducting the balance in the depreciation reserve account is:

Year	Intrastate	Intrastate exchange
1923	$96,888,766	$92,606,167
1924	110,207,894	105,155,508
1925	123,231,118	117,292,251
1926	137,023,029	130,048,842
1927	152,974,551	144,524,763
1928	167,005,081	156,893,443
1929	176,903,557	164,880,569
1930	186,481,135	172,740,151
1931	190,523,862	176,146,536

[fol. 2501] 67. That the above average value in Finding 66 less the balance in the depreciation reserve account after giving effect to the 1920 Order on depreciation (Finding 43) is:

Year	Intrastate	Intrastate exchange
1923	$73,653,153	$70,401,627
1924	85,640,373	81,716,876
1925	97,220,991	92,541,874
1926	109,131,275	103,579,473
1927	122,969,925	116,183,690
1928	135,408,253	127,215,272
1929	145,419,455	135,545,984
1930	155,423,249	143,981,357
1931	158,868,996	146,883,216

68. That the above average value in Finding 66, less the balance in the depreciation reserve account after giving effect to the 1923 Order on depreciation (Finding 43) is:

Year	Intrastate	Intrastate exchange
1923	$70,639,963	$67,506,119
1924	82,200,875	78,419,761
1925	93,879,210	89,342,597
1926	106,108,313	100,692,239
1927	120,769,886	114,079,379
1928	134,537,004	126,378,650
1929	146,319,599	136,362,564
1930	158,397,844	146,715,717
1931	163,463,396	151,111,531

[fol. 2502] Rate of Return

Part I

On the Basis of Treating the Plaintiff as an Independent Enterprise

69. That the constitutional inadequacy of the intrastate and intrastate exchange net income produced by the attacked rates may be tested, (1) by comparing such net income with the corresponding recorded net income under the existing rates, which latter net income is, by the company's experience and course of conduct, revealed to be constitutionally adequate, and (2) by testing the rate of return from the intrastate and intrastate exchange net income produced by the existing and attacked rates according to the standard of the Bluefield Case (Defendants' Brief, pp. 1042, 1053).

Test I

70. That plaintiff's recorded net income under existing rates produced the following rate of return related to plaintiff's requested rate base:

[fol. 2503] Rate of Return from Recorded Net Income Under Existing Rates.*

	Recorded net income	Intrastate exchange Rate of return on plaintiff's requested rate base
1923	$4,996,252	3.53%
1924	5,597,580	3.67
1925	5,817,884	3.57
1926	5,821,960	3.38
1927	5,941,909	3.26
1928	6,575,395	3.42
1929	8,634,791	4.31
1930	7,931,134	3.78
1931	7,480,717	3.55
		Intrastate total
1923	$5,602,721	3.78%
1924	6,333,828	3.97
1925	6,761,049	3.94
1926	7,015,503	3.87
1927	7,277,439	3.78
1928	8,101,974	3.96
1929	10,204,411	4.75
1930	9,372,355	4.13
1931	8,616,679	3.78
	Intrastate exchange	Intrastate total
1923	2.71%	2.97%
1924	2.67	2.95
1925	2.73	3.11
1926	2.72	3.20
1927	2.71	3.22
1928	3.02	3.55
1929	4.05	4.47
1930	3.52	3.86
1931	3.26	3.47

*Plaintiff's showing of Rate of Return Under Existing Rates Related to its Requested Rate Base, as appears from Plaintiff's Original Brief, p. 319, which is even lower than the Rate of Return from the Recorded Net Income Shown in the Text is:

[fol. 2504] In addition to the above rate of return the American Company, as the investor in plaintiff,* received the following advantages and pecuniary profits that are not reflected in the net earnings available for return and are not received by the ordinary investor on his investment in other business undertakings:

(a) The free use of the Chicago Exchange plant facilities in the interstate and intrastate services of the American Company (Defendants' Brief, p. 647);

(b) The receipt by the American Company of royalties from the Western Electric as consideration for the franchise to the latter to sell its manufactures to plaintiff and the receipt by the American Company of unreasonably large returns on its investment in the Western Electric [fol. 2505] resulting from such manufactures—the American Company as the investor in plaintiff providing capital to purchase such manufactures and acting at the same time as the purchasing agent for plaintiff and as selling agent for the Western Electric (Defendants' Brief, p. 282; Finding 23 (b, c));

(c) The joinder of plaintiff's employees and the employees of the other operating companies of the Bell Sys-

---

* In Chesapeake & Potomac Tel. Co. v. Commonwealth, 136 S. E. 575, the court said (585, 587):

"So that there are distinct but undisclosed advantages and pecuniary profits to the owner of the stock and property of the Virginia Company that are not reflected in the net earnings and dividends of the Virginia Company which are paid directly to such owner. There is the profit from sales and services of the Western Electric Company to the Virginia Company; there is the profit derived from the use of the facilities and agencies of the Virginia Company as well as from the interstate business which the Virginia Company does in aid of and for the benefit of the American Company. These profits cannot be stated. The facts upon which some estimate thereof might be made are not disclosed. Perhaps the complications are so great that they cannot be determined accurately, but the fact that they surely exist is as clear as any other fact in the case.

These intercorporate relations are relevant not only to determine the going concern value as part of the rate base,

tem, of which the American Company is the sole or principal investor, under a plan where the American Company can shift experienced personnel from one section of the country to the other as it sees fit, to protect its interests wherever situated, to strengthen the organization wherever necessary (Defendants' Brief, p. 403);

(d) The making and furnishing by plaintiff to the American Company, as its investor, of a detailed statement each year, and for a period of years, in advance of plaintiff's requirements for the purchase of supplies and materials, such statement to be used by the American Company as the investor in the Western Electric for the purpose of enabling the latter company to engineer its manufactures for the protection of the investment of the American Company therein;

(e) The specification by the American Company, as the investor in plaintiff, what new inventions, discoveries and improvements in the art should be woven into the plant of plaintiff to protect the American Company's investment against impairment through failure to keep abreast or ahead of the art.

The above rate of return is, also, after giving effect to the inflation in maintenance, depreciation expense, valuation of physical property and going value, due to the excessive profits made by Western Electric in its sales to

---

but also to ascertain whether the rate of return to the owner is just and reasonable" (p. 585).

* * * * * * * * *

"Because of the intercorporate relations of the American Company with the Virginia Company and the complications to which we have referred, it is impossible to tell with any precision just the amount of the returns to the owner of the Virginia Company, either considered as a separate entity, or as a part of the Bell System.

The profit to the owner of the stock of the Virginia Company is the return produced by the rates prescribed, estimated at more than 6 per cent on the value, or investment, plus the additional return to this owner, the Bell System, produced by the Virginia Company growing out of the subserviency to and cooperation with the American Company (owner) of its business)" (p. 587).

[fol. 2506] plaintiff and resulting from the spot prices used by plaintiff in connection with its requested rate base (Finding 35).

71. That with such recorded net income during the period 1923 to 1931, inclusive, plaintiff attracted capital on the most favorable basis and maintained the stability of its securities on a comparable basis with those of the highest grade securities of other utilities. During this period, plaintiff was able to expand its business so as to meet increasing demands, to pay its operating expenses including interest on money borrowed, to earn and pay 8% dividends on its capital stock and to accumulate a surplus (Defendants' Brief, p. 995, Supreme Court Decision, Appendix, 22). Plaintiff has never taken any steps to have increased the rates prescribed by the Order of December 20, 1920, although under the Illinois Commerce Commission Law it had the right so to do at any time after two years from the effective date of such order, i. e., at any time after January 1, 1923. Plaintiff's position in its pleadings and on the record shows that it considered its net income under the existing rates adequate (Defendants' Brief, pp. 1045, 994):

Plaintiff's prognosticated minimum return of 8% for the years 1923 to 1927 and 7% for the years 1928 to 1931, on plaintiff's requested rate base, would yield to plaintiff's stockholders on their investment in capital and surplus allocable to the Chicago Intrastate Exchange, the following per cents of return in each of the years 1923 to 1930 and would yield to the American Company's stockholders on their proportionate investment (capital and surplus) in plaintiff the following percentages of return (Defendants' Brief, p. 1034):

[foll. 2507]

	Per cent of return to plaintiff's stockholders on capital and surplus	Per cent of return to American Company's stockholders on capital and surplus.
1923	25.17	33.04
1924	23.55	31.76
1925	24.01	34.02
1926	22.34	30.99
1927	21.25	24.70
1928	16.19	21.37
1929	16.05	22.16
1930	14.81	20.03
1931	Not available	Not available

The rate of return resulting from the recorded intrastate and intrastate exchange net income was in each year constitutionally adequate.

72. The rate of return resulting from the recorded net income after giving effect to the adjustments of (a) 1920 Order on depreciation; and (b) the reduction in net revenue resulting from the reduction in telephone rates prescribed by the 1923 Order is, for each year:

Intrastate Exchange

	Plaintiff's showing of balance available for return from recorded net income under rates in suit	Excess of recorded depreciation charges over depreciation allowance by 1920 order	Adjusted balance available for return	Rate of return from adjusted net income to plaintiff's showing of rate base
1923	$3,483,393	$1,468,147	$4,951,540	3.50%
1924	4,077,765	1,264,338	5,342,103	3.51
1925	4,269,734	1,405,925	5,675,659	3.48
1926	4,210,427	1,564,490	5,774,917	3.36
1927	4,306,547	1,653,390	5,959,937	3.27
1928	4,907,181	1,815,308	6,722,489	3.50
1929	6,941,442	1,731,900	8,673,342	4.33
1930	6,332,081	1,816,781	8,148,862	3.88
1931	6,084,550	1,867,609	7,952,159	3.77
[fol. 2508]		Intrastate Total		
1923	$4,060,603	$1,540,414	$5,601,017	3.78%
1924	4,782,833	1,323,046	6,105,879	3.82
1925	5,178,488	1,475,531	6,654,019	3.88
1926	5,364,933	1,643,145	7,008,078	3.86
1927	5,600,362	1,741,736	7,342,098	3.81
1928	6,388,673	1,919,774	8,308,447	4.06
1929	8,463,829	1,843,678	10,307,507	4.79
1930	7,726,477	1,947,182	9,673,659	4.27
1931	7,182,935	2,006,806	9,189,741	4.03

In addition to such Rate of Return the investor of plaintiff received the advantages and pecuniary profits set forth in Finding 70. Such Rate of Return is also after giving effect to the inflation in expenses and valuation stated in Finding 70.

Such rate of return in each year by comparison with the rate of return resulting from the corresponding re-

corded net income for each of said years is constitutionally adequate.

73. The recorded net income, after giving effect to the adjustments of (a) depreciation expense fixed by the 1923 Order; (b) license contract payments; and (c) separation of revenues; and (d) net reduction in revenue resulting from the reduction in telephone rates prescribed by the 1923 Order is, for each year:

[fol. 2509]

Intrastate Exchange

	Plaintiff's showing of balance available for return under rates in suit	Excess of recorded depreciation charges over allowance under 1923 order after adjustments for license payments and separation of revenue	Adjusted balance available for return	Rate of return from adjusted net income to plaintiff's showing of rate base
1923	$3,483,393	$2,512,251	$5,995,644	4.23%
1924	4,077,765	3,344,458	7,422,223	4.87
1925	4,269,734	3,657,490	7,927,224	4.86
1926	4,210,427	4,330,072	8,540,499	4.99
1927	4,306,547	5,172,954	9,479,501	5.21
1928	4,907,181	5,413,830	10,321,011	5.37
1929	6,941,442	5,713,687	12,655,129	6.32
1930	6,332,081	5,915,418	12,247,499	5.83
1931	6,084,550	5,009,269	11,093,819	5.26

Intrastate Total

1923	$4,060,603	$2,148,095	$6,208,698	4.19%
1924	4,782,833	2,982,340	7,765,173	4.86
1925	5,178,488	3,241,429	8,419,917	4.91
1926	5,364,933	3,843,997	9,208,930	5.08
1927	5,600,362	4,643,154	10,243,516	5.32
1928	6,388,673	4,731,248	11,119,921	5.43
1929	8,463,829	4,925,489	13,389,318	6.23
1930	7,772,647	5,120,657	12,893,304	5.69
1931	7,182,935	4,298,370	11,481,305	5.04

In addition to such Rate of Return the investor of plaintiff received the advantages and pecuniary profits set forth in Finding 70. Such Rate of Return is also after giving effect to the inflation in expenses and valuation stated in Finding 70.

Such rate of return in each year by comparison with the rate of return resulting from the corresponding recorded net income for each of said years is constitutionally adequate.

[fol. 2510] Test 2

74. That the adjusted net income from existing and attacked telephone rates (Findings 1 and 2) produced the following rate of return on (a) plaintiff's intrastate and intrastate exchange rate base as requested by defendants; (b) on plaintiff's requested rate base (Plaintiff's Requested Finding 12); and (c) on plaintiff's requested rate base adjusted to give effect to the defendants' request for Going Value and the deduction of the depreciation reserve account in each of the years under investigation:

Rate of Return from Adjusted Net Income Produced by Existing Telephone Rates

	Related to defendants' requested rate base		Related to plaintiff's requested rate base		Related to plaintiff's rate base adjusted*	
	Intrastate Exchange	Intrastate Total	Intrastate Exchange	Intrastate Total	Intrastate Exchange	Intrastate Total
1923	12.32%	12.17%	6.12%	6.05%	8.32%	8.21%
1924	11.35	11.25	6.09	6.03	8.15	8.07
1925	10.59	10.61	6.01	6.02	7.91	7.91
1926	9.61	9.75	5.79	5.87	7.52	7.62
1927	8.92	9.03	5.69	5.76	7.31	7.40
1928	8.37	8.42	5.54	5.57	7.04	7.08
1929	9.29	9.11	6.29	6.16	7.91	7.75
1930	8.33	8.06	5.72	5.52	7.10	6.86
1931	7.77	7.40	5.41	5.16	6.71	6.39

In addition to such Rate of Return, the investor of plaintiff received the advantages and pecuniary profits set forth in Finding 70. Such Rate of Return is, also, after giving effect to the inflation in expenses and valuation, stated in Finding 70.

* The adjustment to plaintiff's rate base gives effect for all the elements included therein adjusted by defendants' request for Going Value and for deduction of Depreciation in Valuation.

[fol. 2511]. Rate of Return from Adjusted Net Income Produced by Attacked Rates

	Related to defendants' requested rate base		Related to plaintiff's requested rate base		Related to plaintiff's rate base adjusted*	
	Intrastate Exchange	Intrastate Total	Intrastate Exchange	Intrastate Total	Intrastate Exchange	Intrastate Total
1923	10.72%	10.71%	5.11%	5.11%	7.12%	7.11%
1924	9.76	9.79	5.02	5.04	7.02	7.04
1925	9.10	9.25	4.98	5.06	6.80	6.91
1926	8.61	8.87	5.04	5.19	6.74	6.94
1927	8.36	8.60	5.24	5.39	6.86	7.05
1928	8.15	8.31	5.36	5.46	6.86	6.99
1929	9.27	9.21	6.31	6.27	7.89	7.83
1930	8.27	8.10	5.78	5.66	7.03	6.89
1931	7.28	7.02	5.22	5.03	6.28	6.05

In addition to such Rate of Return, the investor of plaintiff received the advantages and pecuniary profits set forth in Finding 70. Such Rate of Return is, also, after giving effect to the inflation in expenses and valuation, stated in Finding 70.

Such rate of return resulting from the net income produced by the existing and attacked rates, taking into account the unique features of plaintiff's operations not existing in the case of other businesses in their relations to their investors, as shown in Finding 70, is in each case and in each year under investigation constitutionally adequate. (Chesapeake & Potomac Tel. Co. of Va. v. Commonwealth, 147 Va. 43; 136 S. E. 575; Chesapeake & Potomac Tel. Co. v. Whitman, 3. Fed. (2d) 938).

[fol. 2512] Part II

On the Basis of Treating the Plaintiff as a Component Part of the Integrated Bell System

75. That plaintiff, as part of the Bell System, differs so widely in form of organization and in relation to the pub-

*The adjustment to plaintiff's rate base gives effect to all the elements included therein excepting only the defendants' request for Going Value and deduction of Depreciation in Valuation.

lic and the investors from independent enterprises considered that their experience is rendered wholly inapplicable to it (Defendants' Brief, p. 1053).

That the American Company has made itself the financing company to provide the permanent capital for the licensee companies of the Bell System (Defendants' Brief, p. 1070).

That the American Company, as the financing company, has provided a cooperative plan for the financing of the licensee companies (Defendants' Brief, p. 1071).

Six Contributions by Licensee Companies

(a) The licensee companies pay a yearly uniform assessment determined by the American Company to maintain outside their respective territories its operations as the headquarters department functioning for the Bell System as a whole (license payment) (Defendants' Brief, p. 1071).

(b) The licensee companies perform within their own territories without charge such uniform services for the headquarters department as it may require, such as selling stock, advertising the Bell System as a whole, and making available personnel to other licensee companies, as required for their efficient operation (Defendants' Brief, p. 1071).

[fol. 2513] (c) The licensee companies use within their own territories without compensation their exchange plant facilities for the interconnection between them by long distance lines, as the headquarters department may require (Defendants' Brief, p. 1071).

(d) The licensee companies pay to the headquarters department for the use of permanent capital or of temporary funds supplied by it to them, uniform cash dividend or interest rates (Defendants' Brief, p. 1072).

(e) The licensee companies pay uniform prices for all purchases made from the manufacturing department of the Bell System represented by the Western Electric (Defendants' Brief, p. 1072).

(f) Each licensee company, after absorbing the costs and expenses of performing the above services in its own territory and of the assessment to the headquarters depart-

ment just described, is expected to maintain net earnings from its own operations to yield a per cent return on its investment not less than the average per cent return on a comparable basis on the investment of the licensee companies as a whole as used or found necessary to attract capital and to maintain the stability of the securities of the Bell System (Defendants' Brief, p. 1072).

Six Contributions by the American Company

(a) The physical assets of the American Company and the physical assets of all of the licensee companies are pooled to form the rate base upon which the adequate per cent amount of return is calculated in order to attract the investor of the American Company, who are considered the investors of the Bell System (Defendants' Brief, p. 1072).

[fol. 2514] (b) All of the earnings in the treasury of the American Company over and above the actual expenses of the Central Administration, plus all of the net earnings of the Western Electric, plus all of the earnings of the Long Lines, are pooled with the net earnings of the licensee companies from their own operations, for the financing of all of the parts of the Bell System (Defendants' Brief, p. 1073).

(c) The cash dividends paid to the American Company by the licensee companies are pooled with the net earnings of its own treasury from the long distance service and from the license payments remaining above the expenses of the Central Administration, and with the cash dividends from the Western Electric, to form the fund to pay the cash return to its own investors as the investors of the Bell System (Defendants' Brief, p. 1073).

(d) The surplus in the treasury of each licensee company is pooled with the surplus of the net profits of the Central Administration, the surplus of the net profits from the Long Lines Department, to form the combined surplus to safeguard the continuity of dividends to the investors of the Bell System from the American Company (Defendants' Brief, p. 1073).

(e) All of the funds derived by the American Company from its investors are used to finance every part of the Bell System (Defendants' Brief, p. 1073).

(f) The American Company, by consenting to the pledge by a licensee company of the latter's rights under its contract defining its relationship to the Bell System, makes available to the holders of the credit securities issued by each such licensee company, the same benefits of the co-operative financing plan as are available to the stock in-[fol. 2515] vestors of the American Company as investors of the Bell System (Defendants' Brief, p. 1074).

76. Under the plan of cooperative financing of the licensee companies shown in Finding 75, when plaintiff makes the six uniform contributions required by it to be made, it has complied with all possible requirements necessary on its part to enable the American Company as the financing department to attract capital for it and to maintain the stability of its securities.

The constitutional inadequacy of the rates of plaintiff should therefore be determined by viewing the relation of the net earnings from its own intrastate and intrastate-exchange operations to the average required minimum net earnings, on a comparable basis, of the other licensee companies. In the absence of a showing that the average net earnings from the operations of the other licensee companies are inadequate no issue of confiscation can arise as to the intrastate and intrastate exchange net earnings from the operations of plaintiff so long as such licensee's showing is as good as or is better than such average.

77. That the average rate of return of the other licensees after making the six contributions required of them as shown in Finding 75 during each of the years under investigation, resulting from their recorded net income related to average fixed capital, material and supplies, less average accrued depreciation is (X-302):

[fol. 2516]

	For all companies	For all licensees other than plaintiff.
1923	6.84%	6.72%
1924	6.56	6.42
1925	7.26	7.16
1926	7.80	7.77
1927	7.52	7.50
1928	7.87	7.85
1929	7.91	7.86
1930	7.09	7.04
1931	6.74	6.72

That no showing was made that the average net earnings from the operations of the licensees under the cooperative plan of financing, as shown in Finding 75, was not sufficient to attract capital and to maintain the stability of the securities of the Bell System during any year or years of this period. The record shows that during each of the years under investigation the licensees and the American Company attracted capital on a most favorable basis and maintained the stability of their securities on a comparable basis with those of the highest grade securities of other utilities (Defendants' Brief, pp. 999, 1010); the rate of return related to the investment in this finding is in each of the years 1923 to 1931, inclusive, clearly adequate to permit plaintiff, as a part of the Bell System, to attract capital and to maintain the stability of its securities.

78. That the license payment of plaintiff under the attacked telephone rates as its yearly assessment under the cooperative financing plan stated in Finding 75 would exceed the average yearly assessment of the other licensees by the following amounts (X-151):

[fol. 2517]

	Intrastate	Intrastate Exchange
1923	$407,722	$388,610
1924	403,527	369,826
1925	352,535	329,077
1926	258,047	237,496
1927	307,909	283,444
1928	83,898	75,684
1929	201,050	185,323
1930	162,277	149,079
1931	199,096	184,190

79. That the amount of excess under the attacked rates of the net income of the Chicago Intrastate and Chicago Intrastate Exchange Service, after giving effect to the adjustments indicated below, over the average return of the other licensees, upon the basis of the cooperative plan of financing above stated in Finding 75(f), for each year would be:

	Chicago Intrastate excess under attacked rates of net income—after adjustment for (a) 1923 order on depreciation; (b) separation of revenue and (c) license payment as per finding 78—over return of other licensees (X-333-4; Def. brief, p. 1089)	Chicago Intrastate exchange excess under attacked rates of net income—after adjustment for (a) 1923 order on depreciation; (c) separation of revenues and (c) license payment as per finding 78—over return of other licensees (X-333-4) (Def. brief, p. 1089)
1923	$2,084,085	$2,114,052
1924	2,155,865	2,097,754
1925	1,389,265	1,274,422
1926	682,375	497,564
1927	752,701	571,614
1928	663,651	538,494
1929	2,048,304	2,111,058
1930	2,220,250	2,419,576
1931	1,043,590	1,450,269
Total	$13,040,086	$13,074,803

[fol. 2518] That on the basis of Finding 77 each class of plaintiff's intrastate net income is constitutionally adequate.

80. That plaintiff has not shown that the telephone rates prescribed by the 1923 Order if made effective for 1932 thereafter are and would be constitutionally inadequate.

General Conclusions of Law.

81. All times since the effective date of the Order of the Illinois Commerce Commission herein complained of, the telephone rates prescribed in said Order have been, and they are now, constitutionally adequate; and said Order is valid.

82. The plaintiff's bill of complaint should be dismissed for want of equity.

83. The interlocutory injunction herein should be vacated.

84. That plaintiff should be directed to make refunds, under further order of this Court, in the following amounts in addition to the amounts to be determined for the year 1932 and to the date of final decree herein (Defendants' Brief, p. 1090):

	Principal a	5% Simple Interest b	Total of a & b
1923	$527,926	$213,301	$741,227
1924	2,124,632	792,003	2,916,635
1925	2,181,614	704,313	2,885,927
1926	2,203,556	601,073	2,804,629
1927	2,221,798	495,141	2,716,939
1928	2,168,357	375,168	2,543,525
1929	2,060,444	253,693	2,314,137
1930	1,879,411	138,369	2,017,780
1931	1,632,466	38,372	1,670,838
Total	$17,000,204	$3,611,433	$20,611,637

[Vol. 2519] 85. The burden is upon the plaintiff to make out a clear case for the relief sought.

Judicial interference with the State's prescribing rates for public utilities by legislative act or by acts of a Commission duly authorized, should never occur unless the case made by the plaintiff presents clearly and beyond all doubt, such a flagrant attack upon the rights of property under the guise of regulations as to compel the court to say that the rates prescribed will necessarily have the effect to deny just compensation for private property taken for the public use (San Diego Land and Town Co. v. National City, 176 U. S. 739, 754). Before a Federal Court of equity ought to intervene in a case of this character, the case of plaintiff should be of serious magnitude clearly and fully proved, and the principle of law to be applied should be one which the court is prepared deliberately to maintain against all considerations of the other side (Missouri v. Illinois, 200 U. S. 496, 521—defines what is meant by a clear case).

86. In view of the relationship between the American Company and plaintiff, and between the American Company and the Western Electric and its subsidiaries, and between the American Company and other licensee or operating companies similar to plaintiff, and the relationship between plaintiff and such other operating or constituent companies and between plaintiff and Western Electric, resulting from the integration of the business and affairs of all such companies through the ownership of stock and control of such companies by the American Company, there is an absence of arm's length bargaining between the corporate entities involved and of all the elements which go to fix market value, or the fairness, of any such contracts or transactions. Consequently, the opportunity exists for [fol. 2520] charges, contracts and transactions unfavorable to the plaintiff (Western Distributing Co. v. Public Service Commission, 285 U. S. 119). Under such circumstances it is difficult, if not impossible, for a court to ascertain and determine the fairness of every transaction and charge between such parties entering into the question of confiscation. It must follow, therefore, that the action of a Commission empowered by a State to fix rates of a constituent operating company such as plaintiff, a member of such combination, should have greater weight and greater force and effect than the action of such Commission with reference to rates of a utility acting independently and autonomously where it had no such relations with a parent company and its other subsidiaries.

87. Plaintiff on the original hearing which result in the decree that was appealed to the Supreme Court, claimed and took the position that plaintiff was entitled to fix the annual charges for depreciation expense according to its judgment, and that such annual depreciation charges or expense so fixed by plaintiff were unassailable except for arbitrariness or fraud, on the ground that neither the Illinois Public Utilities Commission under the 1920 Order nor the Illinois Commerce Commission under the 1923 Order, had the authority and power to fix by order such depreciation rates or annual depreciation charges or expense. The Supreme Court, having held that such position was unsound, the orders of the State Commissions of 1920 and 1923 with reference to depreciation became and were res

adjudicata, and plaintiff is precluded from claiming that either one or both of said orders are now invalid.

[fol. 2521] 88. The defendants should recover their taxable costs herein and damages as required by the Court.

Respectfully submitted.

Oscar E. Carlstrom, Attorney General, State of Illinois, and Attorney and Solicitor for the Illinois Commerce Commission. William H. Sexton, Corporation Counsel, City of Chicago. George I. Haight, Benjamin F. Goldstein, Edmund D. Adcock, Special Counsel for City of Chicago, Intervenor.

[fols. 2522 & 2523] IN UNITED STATES DISTRICT COURT

MANDATE OF UNITED STATES SUPREME COURT

UNITED STATES OF AMERICA, ss:

(Seal of the Supreme Court of the United States.)

The President of the United States of America to the Honorable the Judges of the District Court of the United States for the Northern District of Illinois, Greeting:

Whereas lately, in the District Court of the United States for the Northern District of Illinois, before you, or some of you, in a cause between Illinois Bell Telephone Company, plaintiff, and Frank L. Smith, Cicero J. Lindley, Hal W. Trovillion, et al., etc., Defendants, and City of Chicago, a Municipal Corporation, Intervening Defendant, in Equity, No. 3746, wherein the decree of the said District Court, entered in said cause on the 28th day of February, A.D., 1930, in the following words, viz:

This cause came on to be further heard at a term of this Court and was argued by counsel, and thereupon, upon consideration thereof, and the Court having filed a formal opinion containing specific findings of fact, it is

Ordered, adjudged, and decreed as follows:

1. That the rates prescribed by Illinois Commerce Commission in its order of August 16, 1923, are confiscatory and deprive plaintiff of its property without due process of law and deny plaintiff the equal protection of the laws in violation of its rights under the Constitution of the United

States. That said order was therefore null and void and plaintiff never had any adequate remedy at law in the premises.

[fol. 2524] 2. That the defendants, Frank L. Smith, Cicero J. Lindly, Hal W. Trovillion, P. H. Moynihan, William Burkhardt, Edward H. Wright and William J. Smith, the persons constituting the Illinois Commerce Commission of the State of Illinois, and Oscar E. Carlstrom, Attorney-General of the State of Illinois, and their respective successors in office, and the City of Chicago, a municipal corporation, be, and they are hereby severally and permanently enjoined and restrained from attempting to compel plaintiff, its officers, agents, or employees hereafter to observe or enforce the rates, charges and rentals for telephone service prescribed by the order of the Illinois Commerce Commission, dated August 16, 1923, and attached to the Bill of Complaint herein as Exhibit "A."

3. That the said defendants and their respective successors in office and all other persons be, and they are hereby, severally and permanently enjoined and restrained from taking any steps or proceedings against the plaintiff, its officers, agents, or employees, to enforce any penalties or any remedy against the plaintiff for disregarding the rates prescribed by the said order of the Illinois Commerce Commission, dated August 16, 1923, and from taking any such steps or proceedings against the plaintiff, its officers, agents or employees, to enforce any penalties or any other remedy against the plaintiff for charging rates in excess of the rates prescribed in said order of the Illinois Commerce Commission, dated August 16, 1923.

4. That all sums of money collected by the plaintiff under the terms of the preliminary and interlocutory decrees entered herein, in excess of the sums which would have been collected under the rates prescribed by said Illinois Commerce Commission, are the property and funds of the plaintiff and belong to it, and plaintiff is released from all obligation to refund to its subscribers any sums of money collected by it under the terms of the preliminary and interlocutory decrees herein.

5. That the plaintiff is hereby released and discharged from any and all liability on account of the certain bond, in the penal sum of one million dollars, executed by said

plaintiff, and filed with this Court pursuant to the terms of the temporary injunction entered herein on December 21, 1923.

6. That plaintiff shall recover its taxable costs and disbursements of the defendants and intervenor-defendant.

Dated at Chicago, Illinois, February 28, 1930.

Evan A. Evans, George T. Page, Circuit Judges.
James H. Wilkerson, District Judge."

[fol. 2525] as by the inspection of the transcript of the record of the said District Court, which was brought into the Supreme Court of the United States by virtue of an appeal agreeably to the act of Congress in such case made and provided, fully and at large appears:

And Whereas, in the present term of October, in the year of our Lord one thousand nine hundred and thirty, the said cause came on to be heard before the said Supreme Court, on the said transcript of record, and was argued by counsel:

On Consideration Thereof, it is now here ordered, adjudged, and decreed by this court that the decree of the said District Court, in this cause be, and the same is, hereby, set aside, with costs in this court to appellants; and that the said defendants, Frank L. Smith, Cicero J. Lindly, Hal W. Trovillion, et al., etc., et al., recover against the said plaintiff two hundred seventy-five dollars and ninety-five cents for their costs herein expended and have execution therefor.

And It Is Further Ordered that this cause be, and the same is hereby, remanded to the said District Court, specially constituted as provided by the statute, for further proceedings in conformity with the opinion of this court, the restraining order entered in the suit to be continued pending further action of the District Court.

December 1, 1930.

You, therefore, are hereby commanded that such execution and further proceedings be had in such cause, in conformity with the opinion and decree of this court, as according to right and justice, and the laws of the United States, ought to be had, the said appeal notwithstanding.

Witness the Honorable Charles E. Hughes, Chief Justice of the United States, the twenty-sixth day of December in the year of our Lord one thousand nine hundred and thirty.

Charles Elmore Cropley, Clerk of the Supreme Court of the United States.

[fol. 2526] IN UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

In Equity

No. 3746

ILLINOIS BELL TELEPHONE COMPANY, Plaintiff,

vs.

FRANK L. SMITH et al., Defendants

ORDER DENYING MOTION TO DISMISS, etc.—February 28, 1931

Defendants' motion to dismiss the above entitled suit and to vacate the restraining order and for other relief specified in said motion filed in this Court on January 8, 1931, coming on to be heard, and the Court after being advised in the premises by oral argument and written briefs and being advised that the hearing of the cause on its merits may be begun in the near future,

(1) It Is Ordered that said motion to dismiss the suit be and the same is hereby denied.

(2) It is Further Ordered that the motion to vacate the restraining order be and the same is hereby denied.

[fol. 2527] (3) It Is Further Ordered that the interlocutory injunctional decree, entered on the 21st day of December, 1923, be and the same is hereby reinstated and upon the same terms and conditions as were imposed when said interlocutory decree was first entered.

(4) It Is Further Ordered that said reinstated interlocutory injunctional decree supersede the restraining order in force since the decision of the Supreme Court of the United States entered December 1, 1930.

(5) It Is Further Ordered that either party to the suit may apply at any time for a modification or a vacation of said interlocutory injunctional decree.

(6) It Is Further Ordered that defendants' motion for an order declaring the rates prescribed by the Order of the Illinois Commerce Commission bearing date, August 16, 1923, to be valid, be held in abeyance until the parties have

offered such further evidence as may be necessary to the determination of this issue and until this Court can make findings of fact in accordance with the directions of the Supreme Court in its decision of December 1, 1930.

(7.) It Is Further Ordered that defendants' motion for a decree directing the plaintiff to refund to its several subscribers the sum collected by it during the pendency of any restraining order or injunction entered in this cause in excess of the sums properly chargeable to said subscribers be denied, but without prejudice to a presentation of the same motion after the Court has made findings in accordance with the directions of the Supreme Court appearing in its decision of December 1, 1930.

(8) It Is Further Ordered that defendants' motion to set aside so much of this Court's final decree entered on [fol. 2528] February 28, 1930, releasing the plaintiff from its liability on account of a certain bond executed by said plaintiff and filed in this Court pursuant to the terms of the interlocutory injunction entered December 21, 1923, be and the same is hereby granted.

(9) It Is Further Ordered that defendants' request to "save and reserve unto themselves all of their rights to presentation of evidence and proof and hearing upon the merits of the issues of fact and law" be and the same is hereby granted.

To the foregoing, and each and every order and provision thereof, the defendants object and except. And the defendants are hereby given leave to file within thirty days a certificate of evidence showing the proceedings before the Court upon defendants' motion and upon this Order.

Evan A. Evans, George T. Page, James H. Wilkerson, Judges.

Dated February 28, 1931.

[fol. 2529] IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER AMENDING ORDER OF FEBRUARY 28, 1931, NUNC PRO TUNC—March 5, 1931

This cause coming on to be heard upon the motion of defendants to amend the Order entered herein on February

28, 1931, nunc pro tunc as of said February 28, 1931, and the Court being advised in the premises,

It is ordered that the said Order entered herein on February 28, 1931, be and the same is hereby amended nunc pro tunc as of said February 28, 1931, by adding at the end of said Order the following:

"To the foregoing, and each and every order and provision thereof, the defendants object and except. And the defendants are hereby given leave to file within thirty days a certificate of evidence showing the proceedings before the Court upon defendants' motion and upon this Order."

Evan A. Evans, James H. Wilkerson, Judges.

[fol. 2530] IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER DENYING MOTION TO DISMISS, CONTINUING RESTRAINING ORDER AND SETTING CAUSE FOR HEARING—March 5, 1931

An appeal having been taken to the Supreme Court of the United States from the final decree made and entered in this cause on February 28, 1930 by this Court, Honorable Evan A. Evans, Honorable George T. Page, Circuit Judges, and Honorable James H. Wilkerson, District Judge, constituting the special Statutory Court under the provisions of Section 266 of the Judicial Code; and the said decree having been set aside by the decision of the Supreme Court made and entered on December 1, 1930, and the cause remanded to this Court, specially constituted, as provided by the statute, for further proceedings in conformity with the opinion of the Supreme Court; and the restraining order heretofore entered herein having been continued in effect by said decision of the Supreme Court, pending further action by this Court:

This cause came duly on to be further heard before this Court, specially constituted as aforesaid, on February 17, 1931, upon the motion of the defendants to dismiss the bill of complaint and to dissolve the restraining order herein, and for further relief, all as set forth in said motion. And

said motion having been argued by counsel and the Court [fol. 2531] being fully advised, it is

Ordered, adjudged, and decreed as follows:

I. Said motion is in all respects denied.

II. The restraining order entered by this Court on December 21, 1923, being the interlocutory decree herein, be, and it is hereby, continued until the final disposition of this cause or the further order of this Court with the same force and effect as if said final decree had not been entered; upon condition, however, that the plaintiff shall file an undertaking or bond in the penal sum of Five Million Dollars ($5,000,000), to be approved by this Court, and to be filed in the office of the Clerk of Court upon the entry of this order.

The Court being further advised at said hearing, in open Court, by counsel for plaintiff that plaintiff desires to have this cause proceed for the introduction of additional evidence to be as hereinafter specified, in conformity with the said opinion and the mandate of the Supreme Court; that the work of collecting the necessary data and of preparing said evidence was begun in the month of December 1930, soon after the said decision of the Supreme Court was made, and before the mandate came down, and at all times since has been and is being diligently carried on with a view to expediting the final disposition of said cause; that plaintiff will be ready to proceed with the introduction of said [fol. 2532] evidence on or about June 1, 1931, and cannot reasonably be ready before that date, and that it is the best judgment of counsel for plaintiff that said evidence can be presented in a period of three weeks of continuous sessions, including therein the time necessary for reasonable and proper cross-examination of its witnesses;

And plaintiff having applied for a setting of the cause for further trial, as aforesaid;

And plaintiff having advised the Court that the further evidence it desires to introduce is as follows:

1. Separation of Property, Revenue, and Expenses

Such additional evidence as is necessary to enable the Court to determine and find, for the entire period and for each of the years involved in the suit, the value of the

property devoted to intra-state service and to intra-state toll and exchange service, respectively; the expenses incident to each kind of service, respectively; the revenues attributable to and arising from each of said services, respectively, and the net revenue, under the rates for telephone service that have been in effect throughout the period of this suit, and under the rates complained of and sought to be enjoined; to the end that by a practical and lawful method the different uses of the property may be recognized and the return properly attributable to the intra-state service may be ascertained accordingly.

2. Net Earnings of the Western Electric Company Arising from its Bell System Business

Evidence showing the net earnings of the Western Elec- [fol. 2533] tric Company arising from the manufacture and sale of apparatus and equipment, and any other business transacted by it with the companies comprising the Bell System, including the plaintiff, and evidence concerning the reasonableness of such net earnings under all the relevant facts and circumstances, to the end that the Court may make findings with respect to the reasonableness of the profits upon this portion of the business of the Western Electric Company, separately considered, and the reasonableness of its prices in relation to any issue in the case bearing upon the charge of confiscation.

3. Cost to the American Telephone and Telegraph Company in Connection with the "License Contract"

Evidence to show, and to enable this Court to determine by specific findings, the cost to the American Company of rendering the "license contract services" to the licensee companies of the Bell System, the payments therefor under said contract, the reasonable amount to be allowed as operating expenses on account of such services, and the reasonable amount which should be allocated in this respect to the operating expenses of the intra-state business of plaintiff in the years to be covered by the final decree.

4. Annual Allowance for Depreciation

Additional evidence to enable this Court to determine by specific findings the proper and lawful amount for de-

preciation to be included in the annual expenses of plaintiff on account of the intra-state business for the period and for each of the years involved in this suit.

[fol. 2534] 5. Rate of Return

Additional evidence to enable this Court to determine by specific findings the rate of return realized from plaintiff's intra-state business, the rate of return which would have been realized from such business under the prescribed rates, and the fair rate of return which the plaintiff is entitled to an opportunity to earn upon its intra-state business, as a matter of constitutional right, having regard to the general considerations adverted to by the Supreme Court in its opinion herein, and also to the special considerations specifically referred to in said opinion as having a bearing upon the question of the fair rate of return to plaintiff from its intra-state business, for the entire period and for each of the years involved in this suit.

6. Such Additional Evidence as May be Required Upon Any Issue in the Case in Order to Extend Over the Entire Period the Showing Heretofore Made by Plaintiff Covering Only the Year 1923, or Covering Less Than All of the Years in Controversy.

In connection with all of the foregoing offer of further evidence, counsel for plaintiff have advised the Court that according to their understanding of the meaning and effect of the decision and mandate of the Supreme Court, the case is not to be reopened for a general and unlimited new trial, but only for the purpose of receiving such additional evidence as is reasonably necessary to enable this Court to make findings in conformity with the opinion of the Su- [fol. 2535] preme Court, and it is upon this understanding that the foregoing specifications of evidence to be offered by plaintiff have been made.

It is further ordered, adjudged, and decreed:

That said cause be set down for hearing, at a date to be fixed by the further order of the Court and upon notice thereof to be given to the parties, for the purpose of permitting the parties to introduce evidence upon the several matters above set forth; and for the further purpose of permitting the parties hereto to introduce such additional

evidence as they may offer and as shall be held by this Court to be in conformity with the decision and mandate of the Supreme Court in this cause.

Dated at Chicago, Illinois, March 5, 1931.

Evan A. Evans, James H. Wilkerson, Judges.

[fol. 2536] IN UNITED STATES DISTRICT COURT

[Title omitted]

BOND OF ILLINOIS BELL TELEPHONE COMPANY—Filed March 5, 1931

Know all men by these presents, that the Illinois Bell Telephone Company, a corporation organized and existing under the laws of the State of Illinois, is held and firmly bound unto the Illinois Commerce Commission of the State of Illinois, and/or the City of Chicago, for the benefit of the telephone subscribers of the said Illinois Bell Telephone Company, in the sum of Five Million and no/100 Dollars ($5,000,000.00), lawful money of the United States, to be paid to said subscribers, for which payment well and truly to be made, the undersigned binds itself and its legal successors and assigns.

Signed and sealed this 28th day of February A. D. 1931.

[fol. 2537] The foregoing obligation is such that:

Whereas, on or about the 27th day of September, A. D. 1923, in a suit in equity then and now pending in the District Court of the United States, for the Northern District of Illinois, in which the said Illinois Bell Telephone Company is plaintiff, and Frank L. Smith, Cicero J. Lindly, Hal W. Trovillion, P. H. Moynihan, James F. Sullivan, Alex J. Johnson and William J. Smith, the persons constituting the said Illinois Commerce Commission of the State of Illinois, and Oscar E. Carlstrom, Attorney General of the State of Illinois, and the City of Chicago, a municipal corporation, are defendants, a temporary restraining order was entered in the said court by which said defendants were severally enjoined and restrained, pending the trial and determination of the cause, and until further order of the court, from attempting to compel the plaintiff, its officers, agents or employees, to observe or put in force the

rates for telephone service prescribed by the Illinois Commerce Commission of the State of Illinois on the 16th day of August, A. D. 1923, and set forth in the bill of complaint therein; and

Whereas, thereafter on or about the 21st day of December, A. D. 1923 an interlocutory injunction order was duly made and filed in said court, by which said defendants were severally enjoined and restrained, pending the trial and determination of the cause, and until the further order of the court, from attempting to compel the plaintiff, its officers, agents, or employees to observe or put in force the rates for telephone service prescribed by the aforesaid order of the Illinois Commerce Commission; and were further enjoined and restrained, pending the trial and determination of the cause, and until the further order of the court, from taking any steps or proceedings against the plaintiff, its officers, agents, or employees, to enforce any penalties [fol. 2538] or any other remedy against the plaintiff for disregarding the rates prescribed by the said order; and

Whereas, thereafter on or about the 28th day of February, A. D. 1930, a permanent injunction was duly issued in the said court by which the said defendants were severally enjoined and restrained from attempting to compel the plaintiff, its officers, agents, or employees, to observe or put into force the rates for telephone service prescribed by the aforesaid order of the Illinois Commerce Commission, and were further enjoined and restrained from taking any steps or proceedings against plaintiff, its officers, agents, or employees to enforce any penalties or any other remedy against the plaintiff for disregarding the rates prescribed by the said order of August 16th, 1923; and

Whereas, the defendants perfected an appeal from the said final injunction to the Supreme Court of the United States; and

Whereas, the Supreme Court of the United States set aside the said injunction order of February 28th, 1930, and remanded the said cause to the District Court of the United States, for the Northern District of Illinois, for further proceedings therein, and directed that the restraining order entered in this suit be continued in effect pending the further action of the District Court of the United States, for the Northern District of Illinois, and

Whereas, by an order entered this day the District Court of the United States, for the Northern District of Illinois, directed that the interlocutory injunction continued in effect by the Supreme Court of the United States, be further continued in effect pending the trial and determination of said cause, and further directed that there be filed in the proceedings herein a bond in the sum of Five Million and no/100 Dollars ($5,000,000.00), to be approved by the Statutory Court hearing said cause.

[fol. 2539] Now, therefore, in the event that said interlocutory injunction shall be hereafter dissolved, and the said Illinois Bell Telephone Company shall in such event well and truly pay to the defendants all costs and damages which may be incurred or suffered by any party who may be found to have been wrongfully enjoined or restrained by said temporary restraining order or by said interlocutory injunction, as continued in effect by order of the Supreme Court of the United States and further continued by order of the District Court of the United States, for the Northern District of Illinois, from the date of said temporary restraining order to the date of the final decree that may be hereafter entered, and shall also well and truly repay to each or any of its subscribers, or to the persons entitled thereto, with interest, either in cash or by credit on subsequent bills, and in such way and manner as the said District Court of the United States, for the Northern District of Illinois, may hereafter direct, any sums paid by the said subscribers to the plaintiff for telephone service rendered such subscribers, in excess of the sums chargeable to said subscribers, or any of them, pursuant to the provisions of the said order of the Illinois Commerce Commission, during the period from the date of said temporary restraining order to the date of the final decree that may be hereafter entered, the enforcement of which is enjoined, then this obligation shall be null and void; otherwise, to remain in full force and effect.

Illinois Bell Telephone Company, by F. O. Hale, President.

Attest: A. R. Bone, Secretary. (Corporate Seal.)

Approved.

Evan A. Evans, Judge. James H. Wilkerson, U. S. District Judge.

[fol. 2540] STATE OF ILLINOIS,
County of Cook, ss:

I, G. J. MacLennan, a notary public for the County and State aforesaid, do hereby certify that F. O. Hale, personally known to me to be the President of the Illinois Bell Telephone Company, a corporation, and A. R. Bone, personally known to me to be the Secretary of said corporation, whose names are subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that as such President and Secretary of said corporation, they signed and delivered the said instrument of writing as President and Secretary of said corporation and caused the corporate seal of said corporation to be affixed thereto, as they were authorized so to do, as their free and voluntary act and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 28th day of February, A. D. 1931.

G. J. MacLennan. My commission expires March 30, 1932. (Notarial Seal.)

[fol. 2541] Copy

IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER SUBSTITUTING PARTIES DEFENDANTS

It appearing to the Court that defendants, Frank L. Smith, Cicero J. Lindly, Hal W. Trovillion, P. H. Moynihan, William Burkhardt, Edward H. Wright and William J. Smith, have heretofore ceased to be members of the Illinois Commerce Commission of the State of Illinois and that the present persons composing the Illinois Commerce Commission are Charles W. Hadley, J. Paul Kuhn, G. Gale Gilbert, Walter H. Wilson, William M. Brinkman and Phil W. Collins.

1. It is ordered, with the consent of parties by stipulation filed herein, that Frank L. Smith, Cicero J. Lindly, Hal W. Trovillion, P. H. Moynihan, William Burkhardt, Edward H. Wright and William J. Smith be, and they are, hereby dismissed as defendants in this cause and that there

be substituted as parties defendants in their place the said [fol. 2542] Charles W. Hadley, J. Paul Kuhn, G. Gale Gilbert, Walter H. Wilson, William M. Brinkman and Phil W. Collins, the persons now composing the Illinois Commerce Commission.

2. It is further ordered, with the consent of all parties hereto, that said Charles W. Hadley, J. Paul Kuhn, G. Gale Gilbert, Walter H. Wilson, William M. Brinkman and Phil W. Collins, so made parties defendants herein, hereby adopt for all purposes the answer of Frank L. Smith, et al., filed herein on October 6, 1923, and agree to abide by all decrees and orders of this Court heretofore entered herein as fully as though they had been named as defendants therein, and agree to abide by all further orders of this Court.

3. It is further ordered, with the consent of all parties hereto, that in all future proceedings in this cause the said six individuals now composing the Illinois Commerce Commission, namely: Charles W. Hadley, J. Paul Kuhn, G. Gale Gilbert, Walter H. Wilson, William M. Brinkman and Phil W. Collins, shall be considered the proper parties defendants in this cause as fully as though all of said individuals had been originally named in the bill of complaint herein, and the names of the said six persons shall hereafter be used in the entitling of all pleadings or orders herein.

4. It is further ordered, with the consent of all parties hereto, that all proceedings, orders or decrees heretofore filed or entered in this cause wherein the individual members of the Illinois Commerce Commission are improperly named, or wherein these six individuals now composing the Illinois Commerce Commission are not properly set forth [fol. 2543] and referred to as parties defendants are hereby amended so as to properly name and describe said six persons now composing the Illinois Commerce Commission as defendants herein as fully as though they had been originally named in all of said pleadings, orders or decrees heretofore filed or entered herein.

Evan A. Evans, James H. Wilkerson, Judges of the District Court of the United States.

Entered Nov. 12, 1931.

O. K.

Oscar E. Carlstrom, Solicitor for the Members of the Illinois Commerce Commission.

[fol. 2544] IN UNITED STATES DISTRICT COURT

[Title omitted]

EXTRACT FROM MOTION OF DEFENDANTS FOR RULE UPON PLAINTIFF TO FURNISH OR MAKE AVAILABLE FOR EXAMINATION CERTAIN DATA, DOCUMENTS, AND RECORDS—Filed November 3, 1931

Now come the defendants and ask that the court direct and enter a rule upon plaintiff to furnish or make available for examination by the defendants or their counsel or representatives, the following information, data, documents and records:

* * * * * * *

(5) Minute books of Illinois Bell and A. T. & T.

* * * * * * *

Respectfully submitted.

Oscar E. Carlstrom, Attorney General, State of Illinois; William H. Sexton, Corporation Counsel, City of Chicago; Geo. I. Haight, Edmund D. Adcock, Benjamin Goldstein, Counsel for Defendants.

[fol. 2545] IN UNITED STATES DISTRICT COURT

[Title omitted]

EXTRACT FROM MEMORANDUM OF PLAINTIFF IN OPPOSITION TO DEFENDANTS' MOTION OF NOVEMBER 3, 1931

Defendants have failed in many respects to bring themselves within the rules with respect to their request for an examination of the minute books of either the Illinois Bell Company or of the American Telephone and Telegraph Company.

(a) Defendant's demand for the minute books of the plaintiff and of the American Telephone and Telegraph Company is a plain "fishing bill."

In their motion, defendants demand the right to an inspection of the minute book of the Board of Directors of

the Illinois Bell Telephone Company and of the Board of Directors and Executive Committee of the American Telephone and Telegraph Company covering the years 1923 to 1930. (Motion paper, page 1 and page 36.)

[fol. 2546] The only foundation for this demand which we have been able to find in defendants' voluminous papers is the following statement on page 37:

"Relevancy.—An important method to determine the policies of plaintiff and of the A. T. & T., the real operator of the facilities of plaintiff, is by examination of the record of the proceedings wherein these policies were formulated. The policies are pertinent in the determination of the extent to which they are intended for the benefit of the utility service or the non-utility service of each company, and the extent to which the expenses and expenditures charged to the utility service in fact are incurred in connection with or for the benefit of the non-utility service. Without these records defendants and this court will be hampered and must depend upon the representations of plaintiff without verification."

The above statement of defendants shows affirmatively that with respect to the minute books of the two companies their application is a "fishing excursion" pure and simple and in plain violation of the restrictions which the courts have uniformly put upon discoveries under Equity Rule 58 or under a bill of discovery.

Defendants seek to examine all of the transactions of the directors of two companies and Executive Committee of one company over a period of eight years. They do not allege even in the most general way that any resolution dealing with the subject matter in issue was actually adopted. Their desire to see the minute books is based upon 'mere suspicion, surmise or vague guesses.' They are seeking to examine into scores, maybe hundreds of transactions in the hope that in one or two they may find something upon which to base an argument. The defendants themselves show this most clearly in their own statement quoted above wherein they state that the purpose of [fol. 2547] the examination of the minutes is to 'determine the policies of plaintiff and of the A. T. & T". They then state "The policies are pertinent in the determination of the extent to which they are intended for the benefit of the

utility service or the non-utility service of each company, and extent to which the expenses and expenditures charged to the utility service in fact are incurred in connection with or for the benefit of the non-utility service". In this statement defendants pile "suspicion, surmise and guess" upon "suspicion, surmise and guess."

[fol. 2548] Copy

IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER GRANTING LEAVE TO TAKE DEPOSITIONS

This cause coming on to be heard on the motion of defendants for leave to take the depositions of certain named witnesses in said motion mentioned, and the Court having before it the said written motion of defendants to take said depositions, in which said motion and in support of same certain facts are set forth and alleged, said motion being verified by the affidavit of counsel; and the Court being fully advised in the premises,

It is ordered that leave be and it is hereby given to the defendants to take the depositions upon oral interrogatories of the witnesses whose names appear below, before Walter O. Verbryck (Imperial Hotel, New York City, N. Y.), a Notary Public in and for the County of New York, New York, at the building of the American Telephone & Telegraph Company, 195 Broadway, New York City, New York, beginning at 11:00 o'clock A. M. on Tuesday, December 15, 1931, and continuing from day to day thereafter, subject to subsequent provisions hereof, the said Walter O. Verbryck being a proper qualified and disinterested person before whom to take such depositions and not of counsel for either of the parties herein or interested in [fol. 2549] the event of said suit, or before any other notary public in and for the City and County of New York, New York, qualified and disinterested and not of counsel for either of the parties herein or interested in the event of said suit:

S. L. Andrew.
F. N. Ankeney.
H. D. Arnold.
J. F. Behan.
O. B. Blackwell.
Edgar S. Bloom.
R. H. Burcher.
Robert W. Burgess.
G. A. Campbell.
H. H. Carter.
H. P. Charlsworth.
E. J. Clarke.
T. T. Cook.
C. P. Cooper.
F. A. Cowan.
E. V. Cox.
Alan B. Crunden.
A. F. Dixon.
W. L. Dusenberry.
C. J. Eggeman.
H. J. Foster.
M. B. French.
G. E. Folk.
Bancroft Gherardi.
S. P. Grace.
C. H. Hadlock.
W. E. Harkness.
Sidney Hocerton.
A. E. Holcomb.
H. Jeavons.
R. L. Jones.
F. W. Jewett.
M. R. Koehler.
R. G. Keeler.
H. L. Kane.
G. B. Larkin.
E. C. McAllister.
E. Miller.
T. G. Miller.
J. E. Moravec.
L. F. Morehouse.
A. G. Morris.
C. Morsack.
John Mills.
H. H. Nance.
R. N. Nicely.
W. J. O'Connor.
John E. Otterson.
A. W. Page.
G. B. Parker.
J. J. Pilliod.
J. H. Ray.
R. I. Rees.
J. G. Roberts.
K. T. Rood.
R. B. Shaver.
H. Blair Smith.
G. C. Southworth.
Clarence G. Stoll.
W. J. Stout.
H. S. Sheppard.
G. B. Thomas.
W. G. Thompson.
C. Uhrig.
C. S. Vancise.
J. L. R. Van Meter.
H. J. Warren.
Carl Waterson.
E. F. Watson.
K. L. Wilkinson.
E. S. Wilson.

[fol. 2550] all residing at or near New York City, New York, and more than one hundred miles from the place of trial herein.

The taking of these depositions is subject to the following provisions:

These depositions shall continue from day to day after Tuesday, December 15th, 1931, but there shall be an ad-

journment not later than noon on Wednesday, December 23rd, 1931, until December 28th, 1931, or until such time thereafter as the solicitors for defendants shall elect, providing they shall give three days notice to solicitors for plaintiff of such date, and thereupon the taking of such depositions shall continue from day to day thereafter until completed.

The persons whose depositions are to be taken are officers or employees of the American Telephone & Telegraph Company, the Western Electric Company, Inc., or their subsidiaries. So that the order in which the testimony is to be taken shall be fixed, solicitors for the defendants shall notify solicitors for the plaintiff on or before Thursday, December 10th, 1931, that they will first examine witnesses who are officers of or employed in a designated department of the American Telephone & Telegraph Company or the Western Electric Company or by some subsidiary corporation of one of said companies, and such witnesses shall be first examined. Solicitors for the defendants shall notify solicitors for the plaintiff on or before Monday, December 14th, 1931, of the order in which the remaining witnesses shall be examined by stating the departments of the American Telephone & Telegraph Company or the Western Electric Company or the names of the subsidiaries in which such witnesses are officers or are employed, and the witnesses shall be examined in said order, by departments, [fol. 2551] subject to the right of solicitors for the defendants to change such order stated in their notice of December 14th, 1931, upon twenty-four hours notice to solicitors for plaintiff; provided, however, that in the event defendants desire to examine witnesses employed in any department of the Western Electric or the American Telephone & Telegraph Company or any of their subsidiaries after other witnesses have been examined in any such department and after the defendants' solicitors have started the examination of witnesses in other departments, then defendants may examine such other witnesses in any such department upon giving twenty-four hours notice of their intention so to do to solicitors for plaintiff.

It is further ordered that said depositions be certified by the notary taking the same and transmitted under seal to

the Clerk of this Court and filed herein on or before February 1, A. D. 1932.

Enter.

(Signed) Evan A. Evans, James A. Wilkerson, Judges.

(Entered December 4, 1931.)

Copy

[fol. 2552] IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER GRANTING LEAVE TO TAKE DEPOSITIONS OF CERTAIN WITNESSES AT NEW YORK CITY, NEW YORK, AND TO AMEND ORDER ENTERED DECEMBER 4, 1931, GIVING LEAVE TO TAKE DEPOSITIONS OF CERTAIN OTHER WITNESSES AT NEW YORK CITY.

This cause coming on to be heard on the motion of defendants for leave to take the depositions of certain named witnesses in said motion mentioned, at the same time and place and before the same notary public as is provided by order entered December 4, 1931, for the taking of the depositions of certain other named witnesses at New York City beginning at 11:00 o'clock A. M. Tuesday, December 15, 1931, at the building of the American Telephone & Telegraph Company, 195 Broadway, New York City, New York, and to amend the said order of December 4, 1931, so as to include in the list of witnesses therein named the witnesses in said motion mentioned; and the Court having before it the said written motion of defendants to take said depositions, in which said motion and in support of same certain facts are set forth and alleged, said motion being verified by the affidavit of counsel; and it appearing to the Court that the solicitors for plaintiff have been duly notified of said motion, and the Court being fully advised in the premises,

[fol. 2553] It is ordered that leave be and it is hereby given to the defendants to take the depositions upon oral interrogatories of the witnesses whose names appear below, at the same time and place and before the same notary

public as is provided by the order of December 4, 1931, with respect to the taking of depositions of certain witnesses whose names appear in said order of December 4, 1931, and that the said order of December 4, 1931, be and the same is hereby amended so as to include or add to the said list of persons whose depositions are provided to be taken by said order, the persons whose names appear below:

Western Electric Company, Inc.:

T. K. Stevenson—Comptroller of manufacture.
D. Levinger—Engineer of manufacture.
O. C. Spurling—Engineer of plant.
W. F. Hosford—Vice President in charge of manufacture.
W. T. Teague—Vice President in charge of sales.
J. W. Bancker—Vice President in charge of traffic and purchasing.
R. H. Gregory—Comptroller.
H. A. Halligan—Vice President, general staff.
F. T. Gilman—Treasurer.
H. B. Gilman—Secretary
D. C. Tanner—General Patent Attorney.

American Telephone & Telegraph Company:

A. A. Marsters—Secretary.
E. F. Carter—Vice President.
C. A. Heiss—Comptroller.
John H. Peck—Attorney.

Bell Telephone Laboratories, Inc.:

J. W. Farrell—Secretary and general attorney.
J. G. Roberts—General patent attorney.

all residing at New York City, New York, and more than one hundred miles from the place of trial herein.

It is further ordered that the taking of the depositions of the witnesses above named shall be subject to the same conditions as are provided by said order of December 4,

[fol. 2554] 1931, with reference to the taking of the depositions of the witnesses therein named, and the depositions of the above named witnesses herein shall be taken in the same way and in the same manner and on the same conditions

as if their names had been included in said order of December 4, 1931.

Enter.

(Signed) Evan A. Evans, James H. Wilkerson, Judges.

(Entered December 8, 1931.)

[fol. 2555] In United States District Court

[Title omitted]

Order Denying Defendants' Motion for Production and Inspection of Documents—Dec. 17, 1931

This cause came on at this term upon application by defendants for production and inspection of books and other documents, and the Court having heard arguments of counsel, it is hereby

Ordered and adjudged that the application for production and inspection of books and other documents other than those covered by agreement, is for the present denied.

To the foregoing, defendants object and except.

Enter.

James H. Wilkerson, Judge.

[fol. 2556] In United States District Court

[Title omitted]

Order Substituting Party Defendant

In appearing to the Court that defendant, Charles W. Hadley, has heretofore ceased to be a member of the Illinois Commerce Commission of the State of Illinois, and that Paul Samuell has heretofore become a member of said Illinois Commerce Commission:

1. It is ordered, with the consent of parties by stipulation filed herein, that Charles W. Hadley be, and he is hereby dismissed as defendant in this cause, and that there by substituted as party defendant in his place the said Paul Samuell.

2. It is further ordered, with the consent of all parties hereto, that said Paul Samuell, so made party defendant

herein, hereby adopts for all purposes the answer of Frank [fol. 2557] L. Smith, et al., filed herein on October 6, 1923, and agrees to abide by all decrees and orders of this Court heretofore entered herein as fully as though he had been named as defendant therein, and agrees to abide by all further orders of this Court.

3. It is further ordered, with the consent of all parties hereto, that in all future proceedings in this cause the said six individuals now composing the Illinois Commerce Commission, namely: G. Gale Gilbert, J. Paul Kuhn, Walter H. Wilson, William M. Brinkman, Phil W. Collins and Paul Samuell, shall be considered the proper parties defendants in this cause as fully as though all of said individuals had been originally named in the bill of complaint herein, and the names of the said six persons shall hereafter be used in the entitling of all pleadings or orders herein.

4. It is further ordered, with the consent of all parties hereto, that all proceedings, orders or decrees heretofore filed or entered in this cause wherein the individual members of the Illinois Commerce Commission are improperly named, or wherein these six individuals now composing the Illinois Commerce Commission are not properly set forth and referred to as parties defendants are hereby amended so as to properly name and describe said six persons now composing the Illinois Commerce Commission as defendants herein as fully as though they had been originally named in all of said pleadings, orders or decrees heretofore filed or entered herein.

Evan A. Evans, James H. Wilkerson, Judges of the District Court of the United States.

Approved.

Oscar E. Carlstrom, Atty. Gen'l, Sol'r for Certain Defendants.

[fol. 2558] Copy

IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER SUBSTITUTING JUDGE

Whereas a statutory court was heretofore formed in the above-entitled cause pursuant to section 266 of the Judicial

Code, which court consisted of the following judges: Evan A. Evans, Circuit Judge, George T. Page, Circuit Judge, and James H. Wilkerson, District Judge, and

Whereas it has now become necessary for George T. Page, Circuit Judge to withdraw as a member of said statutory court,

It is hereby ordered that William M. Sparks, judge of the circuit court of appeals for the seventh circuit, be appointed as a member of the statutory court in the above-entitled cause, in the place of Judge Page.

(Signed) Evan A. Evans, James H. Wilkerson.

Dec. 8th, 1932.

[fol. 2559] In United States District Court for the Northern District of Illinois, Eastern Division

In Equity. No. 3746

Illinois Bell Telephone Company, Plaintiff,

vs.

G. Gale Gilbert, J. Paul Kuhn, Walter H. Wilson, William M. Brinkman, Phil W. Collins, and Paul Samuell, the Persons Constituting the Illinois Commerce Commission of the State of Illinois, and Oscar E. Carlstrom, Attorney General of the State of Illinois, Defendants, and City of Chicago, a Municipal Corporation, Intervenor

Before Evans and Sparks, Circuit Judges, and Wilkerson, District Judge

Opinion—Filed April 29, 1933

Per Curiam:

The final decree of this Court entered on January 31, 1930, enjoined the enforcement of an order of the Illinois Commerce Commission which prescribed rates for telephone service in the City of Chicago upon the ground that the order was confiscatory (38 Fed. (2d) 77). The order of the Commission was made on August 16, 1923, effective [fol. 2560] October 1, 1923. The decree of January 31, 1930, was set aside by the Supreme Court and the cause remanded

to this Court (282 U. S. 133). The Supreme Court said that "there should be appropriate findings as to the results of the intrastate business in Chicago and the effect of the rates in question for each of the years since the date of the Commission's order."

As to the separation of the intrastate and interstate property, revenues and expenses of the [redacted] Supreme Court (p. 149) said:

"In view of the questions presented [redacted], the validity of the order of the state commission [redacted] suitably tested only by an appropriate determination [redacted] the value of the property employed in the intrastate business and of the compensation receivable for the intrastate service under the rates prescribed * * *. As to the value of that property, and as to the revenue and expenses incident to that business, separately considered, there should be specific findings * * *."

And again on the same subject:

"In the method used by the Illinois Company in separating its interstate and intrastate business, for the purpose of the computations which were submitted to the court, what is called exchange property, that is, the property used at the subscriber's station and from that station to the toll switchboard, or to the toll trunk lines, was attributed entirely to the intrastate service. This method was adopted as a matter of convenience, in view of the practical difficulty of dividing the property between the interstate and intrastate services. The appellants insist that this method is erroneous, and they point to the indisputable fact that the subscriber's station, and the other facilities of the Illinois Company which are used in connecting with the long distance toll board, are employed in the interstate transmission and reception of messages. While the difficulty in making an exact apportionment of the property is apparent, and extreme nicety is not required, only reasonable measures being essential * * * it is quite another matter to ignore altogether the actual uses to which the property is put. It is obvious that, unless an apportionment is made, the intrastate service to which the exchange property is allocated will bear an undue burden—to what extent is a matter of controversy. We think that this subject requires

[fol. 2561] further consideration to the end that by some practical method the different uses of the property may be recognized and the return properly attributable to the intrastate service may be ascertained accordingly."

We have endeavored to comply with this mandate in making the separation of intrastate and interstate property, revenue and expenses. The difficulties is so doing, are, of course, apparent. Such separation has been made on the basis of actual use. Certain portions of the property were used exclusively for exchange or local intrastate business, certain portions exclusively for intrastate toll purposes and certain portions exclusively for interstate toll purposes. Such portions of property require no apportionment and have been directly segregated in accordance with their respective uses. The remainder of the property not so directly segregated, including the subscriber's station apparatus and equipment of subscriber's lines, and the local central office equipment, has been apportioned to plaintiff's exchange (intrastate) interstate toll and intrastate toll business, respectively, in accordance with its actual proportionate use for each of such classes of business. Obviously this apportionment cannot be exact. In our opinion, however, it is reasonably accurate.

In valuing the property one of the elements to which consideration has been given is the reproduction cost new as of December 31 for each of the years 1923 to 1931. In the findings of January 31, 1930, we approved the method employed by plaintiff in determining the reproduction cost new of the property. We have adhered to that conclusion, and are now of opinion that the reproduction costs determined in accordance with the method pursued by plaintiff are substantially accurate. Such reproduction costs of plaintiff's property in service in the Chicago area, exclusive of working cash capital, materials and supplies, construction work in progress, and going value, based upon the estimates of plaintiff's engineer, Sloan, are as follows: 1923, $148,581,042; 1924, $156,452,212; 1925, $172,257,055; 1926, $178,413,771; 1927, $191,820,622; 1928, $202,604,906; 1929, $219,327,112; 1930, $228,411,330; 1931, $226,912,713.

The evidence as to the book cost of plaintiff's Chicago area property, exclusive of working cash capital, materials and supplies, construction work in progress, and going

value, as of December 31, for each of the years 1923 to 1931, is as follows: 1923, $100,040,051; 1924, $110,987,626; 1925, [fol. 2562] $126,493,467; 1926, $140,915,840; 1927, $155,508,437; 1928, $169,390,828; 1929, $182,657,561; 1930, $191,286,165; 1931, $195,422,113.

The evidence shows that the average amounts of working cash capital reasonably employed in the Chicago area were as follows: 1923, $3,000,000; 1924, $3,150,000; 1925, $3,325,000; 1926, $3,550,000; 1927, $3,825,000; 1928, $4,050,000; 1929, $4,500,000; 1930, $4,550,000; 1931, $4,250,000.

The average investment of plaintiff in its Chicago area in materials and supplies necessary in the conduct of its business as shown by the evidence are as follows: 1923, $233,022; 1924, $299,310; 1925, $358,227; 1926, $336,693; 1927, $326,599; 1928, $344,336; 1929, $276,091; 1930, $209,784; 1931, $224,433.

The amounts invested in property in the process of construction are shown by the evidence to be as follows: 1923, $812,543; 1924, $2,100,245; 1925, $1,390,296; 1926, $775,279; 1927, $5,437,059; 1928, $3,275,756; 1929, $1,974,688; 1930, $4,415,765; 1931, $441,956.

The valuation of plaintiff's property for 1931 and 1932 presents some difficulties which are not present in the other years. We are obliged to take notice of the general decline in property values which has accompanied the present period of business stagnation. For this reason we cannot take the reproduction estimates, based on the costs of labor and material stated in the record at their face. We have fixed values, therefore, for 1931 and 1932 which in our opinion give due consideration to the element of the present general decline in values.

In considering reproduction cost new as an element in arriving at value, it is necessary to deduct the actual existing depreciation in the property as compared with the new one in order to find the value of the physical elements commonly referred to as the structural value of the property.

A consideration of the evidence on this subject, including that of the witnesses who inspected the property, has led to the conclusion that the fair rate of depreciation is sixteen per cent for the years 1923 to 1928, inclusive, and fifteen per cent for the succeeding years.

In determining the element of going value, consideration has been given to the evidence relating to the construction and management of plaintiff's Chicago property. It is well planned, effectively engineered and properly constructed. It has a capable staff of operating employes. It is well adapted to the needs of Chicago and through years of op- [fol. 2563] erations has become fully efficient and serviceable to that community. Continuously from 1923 to the present time, it has had established routines, attached customers, and trained employes. The plaintiff has been efficiently and economically operated and has had a high standard of maintenance. The company's credit has been excellent and if given reasonable rates it has good earning power. The number of its telephone stations increased from 690,000 at the end of 1923 to over 980,000 at the end of 1930. Plaintiff has engineered and planned its property so that as additions are required to meet the future needs of the community they may be made efficiently and economically.

From a consideration of the pertinent facts, we have reached the conclusion that eight per cent is a reasonable allowance for going value.

With reference to purchases by the Illinois Company from the Western Electric Company, the Supreme Court (p. 153) said:

"The point of the appellants' contention is that the Western Electric Company, through the organization and control of the American Company, occupied a special position with particular advantages in relation to the manufacture and sale of equipment to the licensees of the Bell system, including the Illinois Company, that is, that it was virtually the manufacturing department for that system, and the question is as to the net earnings of the Western Electric Company realized in that department and the extent to which, if at all, such profit figures in the estimates upon which the charge of confiscation is predicated. We think that there should be findings upon this point."

We have set out in the findings the gross purchases by the Illinois Company from Western Electric Company chargeable to construction accounts, as well as the gross purchases attributable to maintenance and other expense accounts. We have also made findings as to the earnings

and profits of the Western Electric Company on sales to its Bell customers, including the plaintiff. We have found that, with an exception hereafter stated, the prices charged by the Western Electric Company have been fair and reasonable, and that its profits have not been excessive.

The term "average investment" of Western Electric Company, as used in the findings, includes its plant and [fol. 2564] manufacturing facilities, merchandise, receivables and cash, less current accounts payable, all at cost to Western except merchandise, which is cost or market, whichever is lower. There is not included in Western's "average investment" any amount for patents, good will, development expense, or going concern value. A large part of Western's manufacturing plant and facilities have been constructed by it at less than they could have purchased from others, and these savings are reflected in its "average investment." Western's factories are advantageously located, well designed and equipped for efficient and economical operation. It maintains a group of engineers who plan its manufacturing operations and constantly study the problem of cheapening its products.

The Western Electric Company, because of its relationship with the Bell system, has no sales expense and no credit risk involved in its Bell business. By receiving advance estimates from the Bell associate companies of their requirements, it is able to plan its manufacturing work more efficiently and economically. These factors result in reducing Western's costs, but they are not advantages retained by Western, since such reductions in costs are passed on by it in prices charged to its Bell customers. As a result of this relationship, Western has been enabled to sell and has sold its manufactured articles to its Bell customers at lower prices than otherwise would have been possible. Western's earnings on investment and profit on sales vary from year to year, due to the relative weighting of several important factors, among which are reductions in prices of its products, rate of turn over, changes in costs of materials and wage schedules. Western's relationship to the Bell system is permanent, not casual. It supplies substantially all of the requirements of all the Bell associated companies for telephone apparatus and lead covered cable at all times. It is, therefore, necessary in arriving at what are reasonable earnings on investment

and profit on sales in the Bell business of Western to take into consideration the results for a period of years and not merely a single year. Western's rate of earnings on its investment in its Bell business and on its investment, less the amount of its depreciation reserve account, has been substantially one-third lower than those of other large manufacturing companies whose risks and hazards make them fairly comparable with Western. Its rate of profit on sales in its Bell business, as distinguished from earnings on investment, has been less than one-half of the rate of [fol. 2565] profit made on sales by other large, comparable manufacturing industries.

It would not have been possible for Western to sell its manufactured products as cheaply as it did except for the economies resulting from quantity production for the entire Bell system. Western develops for the present and future needs of all of those companies which are engaged in rendering a uniform and nation-wide telephone service, through plants engineered and constructed along similar lines. Because of these facts, Western's total earnings on its investment and its profit on its total sales are a fair basis for determining the reasonableness of Western's earnings in its dealings with plaintiff.

It appears from the evidence that taking the price level of December 31, 1920, as one-hundred per cent, the annual changes in price level of sales by Western Electric Company to plaintiff were as follows: 1921, —1.7%; 1922, —10.7%; 1923, +0.2%; 1924, —5.6%; 1925, —1.1%; 1926, —8.7%; 1927, —4.9%; 1928, —10.3%; 1929, —8.6%.

The price level at the end of 1929 was 58.3% of that of December 31, 1920. Effective November 1, 1930, prices were advanced 10.2%. We have reached the conclusion that in the computations relating to value and operating expenses, this advance should not be allowed. Plaintiff attempts to justify this advance by directing attention to the large reductions made in prices between 1920 and 1930. Giving due weight to that fact, we are of the opinion that in view of the general price trend during the years 1931 and 1932 this advance in prices should be eliminated from the computations upon which the charge of confiscation is determined. Considering, however, the reduction in prices prior to November 1, 1930, we are of the opinion that plaintiff is entitled to a maintenance of the 1930 price level dur-

ing the years 1931 and 1932. We have given effect to the elimination of the 10.2% advance in the findings.

As to the "license contract" between the Illinois Company and the American Company, the Supreme Court said:

"In view of the findings, both of the state commissions and of the court, we see no reason to doubt that valuable services were rendered by the American Company, but there should be specific findings by the statutory court with regard to the cost of these services to the American Company and the reasonable amount which should be allocated [fol. 2566] in this respect to the operating expenses of the intrastate business of the Illinois Company in the years covered by the decree."

In arriving at the cost to the American Company of the service rendered by it to the Illinois Company we must consider, first, the evidence as to the work performed by the twelve departments of the American Company. Those departments are: (1) operation and engineering; (2) development and research; (3) information; (4) personnel; (5) public relations; (6) treasurer; (7) controller; (8) secretary; (9) administration (including sundry items; (10) general service bureau; (11) operation-C (general), and (12) legal. Each of these departments furnished license contract services to the licensee companies. The reasonable amount of such costs which should be allocated to the operating expenses of the intrastate business of the Chicago area of plaintiff are as follows: 1923, $581,514; 1924, $608,586; 1925, $640,233; 1926, $741,713; 1927, $804,460; 1928, $864,886; 1929, $907,257; 1930, $1,063,725; 1931, $967,126.

The American Company, during the years 1923 to 1927, inclusive, incurred costs for maintaining the receivers, transmitters and induction coils (telephones) furnished to the licensee companies under the license agreements. The reasonable amount of such costs which should be allocated to the operating expenses of the intrastate business of the Chicago area of plaintiff are as follows: 1923, $68,931; 1924, $83,036; 1925, $100,469; 1926, $126,225; 1927, $129,852.

Such receivers, transmitters and induction coils (telephones) owned by the American Company and supplied to the licensee companies were subject to wear and tear and loss of value from other causes, and a reasonable an-

nual charge for the expense of depreciation constituted a part of the costs to the American Company of furnishing such telephone instruments to the licensee companies. The reasonable amount of such cost of the expense of depreciation is represented by an annual depreciation rate of six per cent applied to the cost of such instruments. The reasonable amounts of such cost of the expense of depreciation which should be allocated to the operating expense of the intrastate business of the Chicago area of the plaintiff are shown by the evidence to be as follows: 1923, $115,000; 1924, $128,000; 1925, $141,000; 1926, $155,000; 1927, $169,000.

The American Company is entitled to charge also as a [fol. 2567] cost of furnishing such receivers, transmitters and induction coils (telephones) under the license agreement an annual return of six per cent of the reasonable value of such instruments. The total amounts of the cost of maintaining such instruments and other apparatus which should be allocated to the operating expenses of the intrastate business of the Chicago area of plaintiff are shown by the evidence to be as follows: 1923, $342,000; 1924, $395,000; 1925, $439,000; 1926, $478,000; 1927, $476,000.

Under the license contract the American Company was obligated to insure and hold harmless the plaintiff and all of the other licensee companies against loss or damage from suits or judgments for infringements of any patents, when such infringement was the result of the use of any apparatus recommended to such licensees by the American Company. That obligation constituted a substantial liability and one which might subject the American Company to large losses. The American Company provided for meeting such possible losses by setting up a contingent reserve over the period from January 1, 1923, to January 1, 1932. Such provision was a reasonable one and it was proper to distribute the amount so set up over a number of years rather than to charge heavy losses in particular years when incurred. The only practical way by which plaintiff and other licensee companies could make compensation to the American Company for that undertaking was to charge against their revenues fairly equal amounts over the period covered by the undertaking of the American Company. The reasonable amounts which should be allocated to the operating expenses of the intrastate business

of the Chicago area of the plaintiff with respect to such undertaking of the American Company, as shown by the evidence, are the following amounts in the following years: 1923, $152,942; 1924, $147,171; 1925, $281,740; 1926, $191,060; 1927, $140,018; 1928, $137,695; 1929, $130,786; 1930, $125,532; 1931, $98,382.

The American Company furnished office space and office furniture and fixtures at cost and at less than value, to its twelve departments. The reasonable amount of these costs which should be allocated to the operating expenses of the intrastate business of the Chicago area of the plaintiff are shown by the evidence to be as follows: 1923, $11,739; 1924, $5,289; 1925, $8,863; 1926, $2,094; 1927, $2,391; 1928, $2,502; 1929, $2,482; 1930, $2,605; 1931, $2,795.

[fol. 2568] During the period from 1923 to 1931, both inclusive, the American Company maintained average annual sums varying from sixty million dollars to ninety-three million dollars in the form of cash for short term, non-fluctuating, low yield securities, for the purpose of meeting any reasonable demands of the licensee companies (excluding long lines) for funds. The amounts received as interest on such funds were insufficient to cover the cost to the American Company of obtaining money to supply such funds. The amounts of such differences which should be allocated to the operating expenses of the intrastate business of the Chicago area of the plaintiff, if such difference is distributed according to the percentages on which the actual costs to the American Company's twelve departments were distributed are as follows: 1923, $94,071; 1924, $106,942; 1925, $163,463; 1926, $153,878; 1927, $139,421; 1928, $140,875; 1929, $39,149; 1930, $157,135; 1931, $131,196. We have reached the conclusion, however, that this expense is not covered by the contract and that the amounts last above stated should not be included under the allowances made for operating expenses.

The evidence shows that the American Company paid taxes in each of the years 1923 to 1931, inclusive. The amounts thereof which should be allocated to the operating expenses of the intrastate business of the Chicago area of plaintiff, if such taxes were distributed in accordance with the percentages on which the actual costs to the American Company of its twelve departments were distributed, are as follows: 1923, $203,459; 1924, $211,228; 1925, $238,046;

1926, $160,482; 1927, $154,036; 1928, $57,446; 1929, $22,390; 1930, $19,844; 1931, $45,895. We have reached the conclusion, however, that those amounts are not covered by the contract and should not be included under the allowances made herein for operating expenses.

From a consideration of the foregoing items which we think are established by the evidence, we have made findings as to the cost of the services under the contract to the American Company, and the reasonable amount which should be allocated in this respect to the operating expenses of the intrastate business of the Illinois Company for the years covered by the contract. We have also made findings as to the portions of the amounts paid by plaintiff to the American Company for license contract services which should be allocated to plaintiff's intrastate telephone expenses in the Chicago area.

[fol. 2569] In determining the amounts to be allowed under the contract as operating expenses, we have taken the amounts found to be the costs to the American Company of those services, unless such amount for a given year is larger than the amount charged on the books of the company. In the latter case, we have allowed as an operating expense the smaller amount charged on the books of the company.

Concerning the annual charge for depreciation, the Supreme Court (p. 158) said:

"While it has been held by this Court that property paid for out of moneys received for past services belongs to the Company, and that the property represented by the credit balance in the reserve for depreciation cannot be used to support the imposition of a confiscatory rate * * * it is evident that past experience is an indication of the Company's requirements for the future. The recognition of the ownership of the property represented by the reserve does not make it necessary to allow similar accumulations to go on if experience shows that these are excessive. The experience of the Illinois Company, together with a careful analysis of the results shown, under comparable conditions, by other companies which are part of the Bell system, and thus enjoy the advantage of the continuous and expert supervision of a central technical organization, should afford a sound basis for judgment as to the amount which in

fairness both to public and private interest should be allowed as an annual charge for depreciation."

And again:

"Accordingly, the (district) court should make appropriate findings with respect to the amount to be allowed in this case as an annual charge for depreciation in connection with the intrastate business."

In determining the amounts which should be allowed as annual charges for depreciation, we have given consideration to the estimates in the orders of the Illinois Public Utilities Commission and Illinois Commerce Commission, to the adjustment of such estimates which is necessary to place them on the basis of the present value of the property for the respective years for which such estimates were made by the commission, to the amounts set up by plaintiff on its books for that expense, to the adjustments of the [fol. 2570] amounts set up by plaintiff on the basis of original or book cost to make the amounts of such allowances correspond with the present value of the property at the time such amounts were set up on the books of the company, to the experience of the Illinois Company and to the results shown in comparable conditions by other companies which are a part of the Bell system. From a consideration of the evidence on the subjects above stated, we have determined the amounts which in our opinion are reasonable and proper amounts, fair alike to public and private interest, to be allowed as the annual charges for depreciation applicable to the intrastate portion of plaintiff's Chicago area property.

With reference to the rate of return, the Supreme Court (p. 161) said:

"It was found by the court that the reduction in revenue caused by the rates in question, as applied to the entire business for the year 1923, would amount to about $1,700,000, and the question is whether the loss when ascertained with respect to the intrastate business would cause confiscation under the applicable standard as above set forth in the Bluefield case, supra. In order to determine this question, the court should find the rate of return which was realized from the intrastate business and the rate of

return which it is fair to conclude would have been realized from that business under the prescribed rates."

Accordingly, we have made findings as to the rate of return which was realized from plaintiff's intrastate business under the rates in force for each of the years during the period in question, and also the rate of return which it is fair to conclude would have been realized in each of those years from that business under the rates prescribed by the commission in its order of 1923.

Applying the standard prescribed by the Supreme Court, we have made findings as to the proper rate of return for each year which is necessary to avoid the charge of confiscation. One of the factors to be considered is that of the rates "generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties."

We have given weight to the facts of which the court takes judicial notice relative to the general decline in cor- [fol. 2571] porate earnings during the years 1931 and 1932. It is for this reason that we have fixed 6½% as the proper rate of return for 1931 and 5½% as the proper rate of return for 1932. A public utility enjoying the advantages of plaintiff is not entitled to the large earnings made by many undertakings during periods of great prosperity. On the other hand, its return in times of business adversity should not be reduced to the extent that the earnings of many private corporations have been impaired. The range of from 7½% to 5½% as found in this case gives weight, in our opinion, to all of the elements which under the ruling of the Supreme Court we are required to consider.

[fol. 2572] IN UNITED STATES DISTRICT COURT

[Title omitted]

FINDINGS OF FACT AND CONCLUSIONS OF LAW—Filed April 29, 1933.

The above entitled cause having come on to be heard pursuant to the mandate of the Supreme Court and the parties having appeared by their respective counsel and offered

evidence in support of their respective contentions, the Court having heard arguments and being advised in the premises, now finds as

Findings of Fact

1. The fair value of all of plaintiff's property in the Chicago area, including working cash capital, materials and supplies, construction work in progress and going value, as an average amount during each of the years 1923 to 1932, inclusive, was as follows: 1923, $130,000,000; 1924, [fol. 2573] $143,000,000; 1925, $157,000,000; 1926, $161,000,000; 1927, $178,000,000; 1928, $186,000,000; 1929, $200,000,000; 1930, $205,000,000; 1931, $197,500,000; 1932, $185,000,000.

2. The fair value of plaintiff's said Chicago area property, used and useful in its entire intrastate business, as an average amount during each of the years 1923 to 1932, inclusive, was as follows: 1923, $124,200,000; 1924, $136,500,000; 1925, $148,500,000; 1926, $151,500,000; 1927, $167,000,000; 1928, $173,000,000; 1929, $184,000,000; 1930, $187,120,000; 1931, $179,100,000; 1932, $166,500,000.

3. The fair value of plaintiff's said Chicago area property, used and useful in its intrastate toll business, as an average amount during each of the years 1923 to 1932, inclusive, was as follows: 1923, $5,515,000; 1924, $6,250,000; 1925, $7,200,000; 1926, $7,800,000; 1927, $9,300,000; 1928, $10,500,000; 1929, $12,600,000; 1930, $13,850,000; 1931, $13,600,000; 1932, $13,100,000.

4. The original or book cost of plaintiff's property is correctly stated in plaintiff's exhibit A54.

5. Sloan's method of estimating reproduction cost new of plaintiff's property is reliable, and plaintiff's estimates of reproduction cost new set forth in plaintiff's exhibit A2 to A10, both inclusive, 12, 14, 18 and 43 are substantially correct. The facts with reference to working cash capital, investment in materials and supplies; and investment in property in process of construction are correctly stated in plaintiff's exhibit A54.

6. The fair rate of depreciation to be applied to the reproduction cost new in determining the valuations for rate making purposes is sixteen per cent for the years 1923 to

1928, inclusive, and fifteen per cent for the succeeding years.

7. The amount to be added on account of going value to the reproduction cost new of the physical property of the plaintiff in determining valuations for rate making purposes is eight per cent thereof.

8. The plaintiff's revenues from that portion of its property used in its intrastate business in its Chicago area for each of the years 1923 to 1931, inclusive, were as follows: 1923, $37,146,181; 1924, $39,653,954; 1925, $42,560,451; 1926, $45,932,698; 1927, $49,163,580; 1928, $53,677,760; 1929, $58,279,602; 1930, $58,698,263; 1931, $56,496,299.

9. The plaintiff's revenues from that portion of its prop- [fol. 2574] erty used in its intrastate toll business in its Chicago area for the years 1923 to 1931, inclusive, were as follows: 1923, $2,424,172; 1924, $2,760,927; 1925, $3,235,260; 1926, $3,867,162; 1927, $4,378,822; 1928, $5,013,414; 1929, $5,583,287; 1930, $5,752,810; 1931, $5,366,875.

10. Plaintiff's reasonable operating expenses, including expense of depreciation, for the intrastate portion of its said Chicago area business for each of the years 1923 to 1931, inclusive, are as follows: 1923, $30,500,000; 1924, $32,170,000; 1925, $34,680,000; 1926, $37,880,000; 1927, $40,800,000; 1928, $45,050,000; 1929, $47,600,000; 1930, $48,560,000; 1931, $46,670,000.

11. The portions of plaintiff's said operating expenses which *is* allocated to its intrastate toll business for each of the years 1923 to 1931, inclusive, are as follows: 1923, $1,750,000; 1924, $1,875,000; 1925, $2,110,000; 1926, $2,570,000; 1927, $2,820,000; 1928, $3,480,000; 1929, $4,020,000; 1930, $4,133,000; 1931, $4,260,000.

12. The gross purchases by plaintiff from Western Electric Company chargeable to construction accounts were for the years 1923 to 1931 inclusive, as follows: 1923, $8,140,067.67; 1924, $10,972,514.19; 1925, $14,372,524.49; 1926, $13,931,933.13; 1927, $17,353,252.96; 1928, $14,877,809.09; 1929, $16,186,266.66; 1930, $16,594,189.87; 1931, $8,809,711.73.

13. The gross purchases by plaintiff from Western Electric Company attributable to maintenance and other expense accounts for the years 1923 to 1931, inclusive, were as fol-

lows: 1923, $1,868,622.44; 1924, $1,446,856.71; 1925, $1,659,293.12; 1926, $2,389,450.58; 1927, $2,740,833.38; 1928, $3,533,042.40; 1929, $4,528,227.72; 1930, $4,411,113.76; 1931, $3,661,567.61.

14. The relations between plaintiff and the Western Electric Company are complicated by the fact that the American Telephone & Telegraph Company owns substantially all of the stock of plaintiff, and also practically all of the stock of the Western Electric Company. Plaintiff assumed the burden of showing and has shown that the prices of goods sold by Western Electric Company to plaintiff, except as hereafter found, were fair and reasonable; that the apparatus manufactured and sold by Western Electric Company to plaintiff was no higher than prices received from the sale by said manufacturer to other purchasers, and that the net earnings of Western Electric Company were not excessive.

15. During the period from 1916 to 1932 the business of [fol. 2575] Western Electric Company with its Bell customers amounted to more than ninety per cent of its sales of its own manufactures, and its business with the Bell customers, if supplies are included, amounted to 82% of its total sales. Western's sales of its manufactured articles constituted approximately 70% of its total sales to its Bell customers.

16. The operating costs of Western Electric Company have been low and its products are of a high standard. The prices charged by Western Electric Company to plaintiff and its other Bell customers have, during the entire period 1916 to 1932, inclusive, been lower than prices charged by other manufacturers for comparable materials and also lower than the prices charged by Western to independent telephone companies and others for the same materials.

17. Plaintiff's exhibit A194 shows the sales by Western Electric to its Bell customers, the earnings on such sales, the per cent of earnings to sales, average investment, per cent of earnings to average investment, average investment less amount of depreciation reserve account, and per cent earnings to average investment less amount of depreciation reserve account, for each of the years 1916 to 1932, for that total period and also for the period 1923 to 1932, inclusive. Said exhibit is correct if adjustments are made: (1) on ac-

count of the accrual of an extraordinary reserve against plant and machinery depreciation in the years 1924, 1925, 1926 and 1927; (2) the difference between the accruals for federal income taxes made currently and the actual taxes paid; (3) the inclusion in the Bell expenses for the year 1924 of an accrual for pension-fund purposes relating to non-Bell business, and (4) a charge to expense on account of patents purchased applicable to the Bell business which were charged to surplus.

18. The earnings and profits by Western Electric Company on sales by its Bell customers are as follows:

	Profit on sales	Earnings on average investment	Earnings on average investment less amount of depreciation reserve account
For period 1916 to 1932	4.5	5.9	7.6
For period 1923 to 1932	4.7	6.1	8.

19. The earnings and profits of Western Electric Company on sales to its Bell customers for each of the years 1916 to 1932, inclusive, are as follows:

[fol. 2576]

	Profit on sales	Earnings on average investment	Earnings on average investment less amount of depreciation reserve account
1916	.5	.8	1.1
1917	2.3	3.6	4.4
1918	2.7	3.1	3.9
1919	3.4	3.9	5.0
1920	3.7	4.9	6.1
1921	7.7	8.7	10.7
1922	4.0	5.2	6.6
1923	3.4	4.8	6.2
1924	4.7	6.9	8.8
1925	7.2	10.2	12.9
1926	5.2	8.3	10.6
1927	6.9	10.4	13.6
1928	6.8	11.8	15.8
1929	4.8	9.1	11.7
1930	3.5	4.6	5.8
1931	5.0	4.2	5.6
1932	(3.9)	(2.3)	(3.3)

20. The sales of Western Electric to plaintiff for use in its entire business and for use in its Chicago area have been a reasonably fair and representative cross section of the total sales of Western Electric to all of its Bell customers. The earnings made by Western Electric Company on its investment allocated to the business done with the plaintiff and its profit on sales made to plaintiff in its Chicago area have been fair and reasonable, except as hereafter found, during the periods 1916 to 1932 and 1923 to 1932. No unreasonable or unfair profit, except as hereafter found, has been made by Western Electric Company in any of its dealings with plaintiff and all of the telephone apparatus, lead covered cable and supplies sold by Western Electric Company to plaintiff have been sold at fair and reasonable prices, except as hereinafter found.

21. In determining reasonable operating expenses to be allowed to plaintiff after November 1, 1930, there should be a reduction of 10% from the prices charged by Western Electric Company on purchases made by plaintiff attributable to maintenance and other expense accounts and this deduction has been made in determining the amount allowed in these findings on account of plaintiff's operating expenses.

[fol. 2577] 22. The amounts of the cost of the services rendered by the American Company under the license contracts which should be allocated to the operating expenses of the intrastate business of the Illinois Company for each of the years 1923 to 1931, inclusive, are as follows: 1923, $1,088,195; 1924, $1,156,046; 1925, $1,369,836; 1926, $1,412,867; 1927, $1,422,869; 1928 $1,005,063; 1929, $1,040,529; 1930, $1,191,882; 1931, $1,068,303.

23. The portions of the amounts paid to the American Company for license contract services and charged on the books of plaintiff as deductions from gross revenues, allocable to plaintiff's intrastate telephone expense in the Chicago area for the years 1923 to 1931, inclusive, are as follows: 1923, $1,662,014; 1924, $1,787,095; 1925, $1,901,069; 1926, $1,845,571; 1927, $1,980,880; 1928, $1,036,616; 1929, $834,276; 1930, $864,131; 1931, $834,199.

24. The amounts stated in finding No. 23 were paid pursuant to a license contract entered into between the plaintiff

and American Telephone & Telegraph Company whereby the latter company granted plaintiff a license to use its patented articles and for advice of counsel and assistance rendered by the American Telephone & Telegraph Company, and plaintiff agreed to pay 4½% of its gross revenues for the use of the instruments and for engineering, financial and advisory services. In the early part of 1926 this percentage was reduced to 4%. At the end of 1927 the license contract was again modified by providing for the sale by the American Telephone & Telegraph Company to the plaintiff of the telephone instruments and plaintiff assumed the obligation to replace and repair them. The royalty contract was changed so that plaintiff paid only two per cent of the gross revenues thereafter until January 1, 1929, when the payment was further reduced to 1½%.

25. In determining plaintiff's reasonable operating expense the amounts to be charged on account of the license agreement for the years 1923 to 1928, inclusive, are the amounts above found to be the cost of the service for each of those years respectively. The amounts to be charged on account of said license agreement for the years 1929 to 1931, both inclusive, are the amounts above found to be charged on the books of the company for each of those years respectively.

26. The reasonable and proper amount to be allowed as [fol. 2578] the annual charge for depreciation applicable to the intrastate portion of plaintiff's said Chicago area property for each of the years 1923 to 1931, inclusive, is as follows: 1923, $4,000,000; 1924, $4,250,000; 1925, $4,750,000; 1926, $5,400,000; 1927, $6,000,000; 1928, $6,650,000; 1929, $7,000,000; 1930, $7,200,000; 1931, $7,400,000.

27. The net income available for return from that portion of plaintiff's property used in its intrastate business in its Chicago area for each of the years 1923 to 1932, inclusive, was as follows: 1923, $6,646,183; 1924, $7,483,954; 1925, $7,880,451; 1926, $8,052,698; 1927, $8,363,580; 1928, $8,627,760; 1929, $10,679,602; 1930, $10,138,263; 1931, $9,826,299; 1932, $8,000,000.

28. If the rates in suit had been effective plaintiff's revenues and net earnings on its intrastate business for each of

the years 1923 to 1931, inclusive, would have been reduced in the following amounts: 1923, $1,541,668; 1924, $1,550,-995; 1925, $1,582,561; 1926, $1,650,570; 1927, $1,677,077; 1928, $1,713,301; 1929, $1,740,000; 1930, $1,645,878; 1931, $1,433,744.

29. The amounts of said reduced earnings, if the rates in suit had been in effect, are allocated to intrastate toll business are as follows: 1923, $28,809; 1924, $31,180; 1925, $34,-411; 1926, $39,037; 1927, $41,715; 1928, $45,087; 1929, $47,-233; 1930, $46,825; 1931, $37,577.

30. The net income available for return from that portion of plaintiff's property used in its intrastate business in its Chicago area under the rates fixed by the Illinois Commerce Commission by its order of August 16, 1923, effective October 1, 1923, for each of the years 1923 to 1932, inclusive, was as follows: 1923, $5,104,515; 1924, $5,932,959; 1925, $6,297,-890; 1926, $6,402,128; 1927, $6,686,503; 1928, $6,914,459; 1929, $8,939,602; 1930, $8,492,385; 1931, $8,392,555; 1932, $6,750,000.

31. The net earnings of plaintiff for the year 1932 are approximately two million dollars less than those for 1931. Such decrease is proportionately larger in the intrastate than in the interstate business. The additional loss in revenues, if the rates in suit had been in effect, is $1,270,000 for the year 1932. The amount available for a return on plaintiff's intrastate business in the Chicago area for 1932 is $1,800,000 less than the amount available for the year 1931.

32. The fair rate of return on the average fair value of plaintiff's intrastate property was 7½% for each of the [fol. 2579] years 1923 to 1927, inclusive, 7% for each of the years 1928, 1929 and 1930, 6½% for 1931, and 5½% for 1932.

33. Plaintiff has earned upon the fair value of its intrastate property as found herein above, for each of the years 1923 to 1932, inclusive, a return in percentages as follows: 1923, 5.4%; 1924, 5.5%; 1925, 5.3%; 1926, 5.3%; 1927, 5.0%; 1928, 5.0%; 1929, 5.8%; 1930, 5.3%; 1931, 5.5%; 1932, 4.8%.

34. If the rates in suit had been in effect, plaintiff would have received upon the fair value of its intrastate property as found herein above, rates of return for each of the years 1923 to 1932, inclusive, percentages as follows: 1923, 4.1%; 1924, 4.4%; 1925, 4.2%; 1926, 4.2%; 1927, 4.0%; 1928, 4.0%; 1929, 4.9%; 1930, 4.5%; 1931, 4.7%; 1932, 4.1%.

35. If the intrastate toll business is separated from the other intrastate business of plaintiff, the rates of return which plaintiff would have received upon its intrastate exchange business for the Chicago area, if the rates in suit had been in force, would have been slightly lower than the rates hereinabove stated for plaintiff's total intrastate business in its Chicago area.

Conclusions of Law

1. At all times since the effective date of the order of the Illinois Commerce Commission herein complained of, the telephone rates prescribed in said order have been, and they are now, confiscatory of plaintiff's property; and said order is void.

2. The interlocutory injunction issued herein should be made permanent.

3. Plaintiff should be released and discharged from all obligation to refund any sums of money collected by it under the terms of the preliminary and interlocutory decrees herein, whether on account of the bond filed herein or otherwise.

Plaintiff should recover its taxable costs herein.

Evan A. Evans, William M. Sparks, Circuit Judges.
James H. Wilkerson, District Judge.

[fol. 2580] In United States District Court

[Title omitted]

Order Substituting Parties Defendants.

It appearing to the Court that defendants J. Paul Kuhn, Walter H. Wilson and William M. Brinkman have heretofore ceased to be members of the Illinois Commerce Com-

mission of the State of Illinois, and that Benjamin F. Lindheimer, Andrew Olson, Charles E. Byrne and Ernest J. Kruetgen have replaced them as members of the Illinois Commerce Commission, and that Oscar E. Carlstrom has heretofore ceased to be the Attorney General of the State of Illinois, and Otto Kerner has replaced him as Attorney General of the State of Illinois,

[fol. 2581] 1. It is ordered, with the consent of parties by stipulation filed herein, that J. Paul Kuhn, Walter H. Wilson and William M. Brinkman, be and they are hereby dismissed as defendants in this cause and that there be substituted as party defendants in their place the said Benjamin F. Lindheimer, Andrew Olson, Charles E. Byrne and Ernest J. Kruetgen, the persons who replaced them on the Illinois Commerce Commission and Oscar E. Carlstrom be and he is hereby dismissed as party defendant in this cause and there be substituted in his place the said Otto Kerner, the present Attorney General of the State of Illinois;

2. It is further ordered, with the consent of all parties hereto that said Benjamin F. Lindheimer, Andrew Olson, Charles E. Byrne and Ernest J. Kruetgen and Otto Kerner, Attorney General of the State of Illinois, made parties defendants herein, hereby adopt for all purposes the answer of Frank L. Smith, et al., filed on October 6, 1923, and agree to abide by all decrees and orders of this court heretofore entered herein as fully as though they had been named as defendants therein, and agree to abide by all further orders of this Court.

3. It is further ordered, with the consent of all parties hereto that in all future proceedings in this cause the persons now composing the Illinois Commerce Commission, namely, Benjamin F. Lindheimer, Ernest J. Kruetgen, Andrew Olson, G. Gale Gilbert, Phil W. Collins, Paul Samuel, Charles E. Byrne and Otto Kerner, Attorney General, shall be considered the proper parties defendants in this cause as fully as though all individuals had been originally named in the Bill of Complaint herein, and the names of said persons shall hereafter be used in the entitling of all pleadings or orders herein.

[fol. 2582] 4. It is further ordered, with the consent of all parties hereto that all previous orders or decrees hereto-

fore filed or entered in this cause wherein the individual members of the Illinois Commerce Commission are improperly named, or wherein the Attorney General of the State of Illinois is improperly named, are hereby amended so as to properly name and describe the persons now composing the Illinois Commerce Commission, and the person who is the Attorney General of the State of Illinois, as defendants herein as fully as though they had been originally named in all of said pleadings, orders or decrees heretofore filed or orders herein.

Evan A. Evans, William M. Sparks, James H. Wilkerson, Judges.

[fol. 2583] IN UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

In Equity. No. 3746

ILLINOIS BELL TELEPHONE COMPANY, Plaintiff,

vs.

BENJAMIN F. LINDHEIMER, ERNEST J. KRUETGEN, ANDREW OLSON, G. Gale Gilbert, Phil W. Collins, Paul Samuell, Charles E. Byrne, the Persons Constituting the Illinois Commerce Commission of the State of Illinois, and Otto Kerner, Attorney General of the State of Illinois, Defendants, and City of Chicago, a Municipal Corporation, Intervenor

FINAL DECREE

This cause came on to be further heard at a term of this Court pursuant to the mandate of the Supreme Court filed herein, and further evidence having been introduced, and the cause having been argued by counsel, and the Court having filed herein an Opinion and Findings of Fact and Conclusions of Law, it is

Ordered, adjudged, and decreed as follows:

1. That the defendants, Benjamin F. Lindheimer, Ernest J. Kruetgen, Andrew Olson, G. Gale Gilbert, Phil W. Collins, Paul Samuell and Charles E. Byrne, the persons con-
[fol. 2584] stituting the Illinois Commerce Commission of the State of Illinois, and Otto Kerner, Attorney General of

the State of Illinois, and their respective successors in office, and the City of Chicago, a municipal corporation, be, and they are hereby, severally and permanently enjoined and restrained from attempting to compel plaintiff, its officers, agents, or employees, to observe, enforce, or charge the rates, charges and rentals for telephone service prescribed by the said order of the Illinois Commerce Commission, dated August 16, 1923, a copy of which said order is attached to the Bill of Complaint herein as Exhibit "A".

2. That the said defendants, Benjamin F. Lindheimer, Ernest J. Kruetgen, Andrew Olson, G. Gale Gilbert, Phil W. Collins, Paul Samuell and Charles E. Byrne, the persons constituting the Illinois Commerce Commission of the State of Illinois, and Otto Kerner, Attorney General of the State of Illinois, and their respective successors in office, and the City of Chicago, a municipal corporation, and all other persons be, and they are hereby, severally and permanently enjoined and restrained from taking any steps or proceedings against the plaintiff, its officers, agents, or employees, to enforce any statutory or other penalties or any remedy against the plaintiff for disregarding the rates prescribed by the said order of the Illinois Commerce Commission, dated August 16, 1923, and from taking any such steps or proceedings against the plaintiff, its officers, agents, or employees, to enforce any statutory or other penalties or any other remedy against the plaintiff for charging rates in excess of the rates prescribed in said order of the Illinois Commerce Commission, dated August 16, 1923.

[fol. 2585] 3. That all sums of money collected by the plaintiff under the terms of the preliminary and interlocutory decrees entered herein, in excess of the sums which would have been collected under the rates prescribed by said Illinois Commerce Commission, are the property and funds of the plaintiff and belong to it, and plaintiff is released from all obligation to refund to its subscribers any sums of money collected by it under the terms of the preliminary and interlocutory decrees herein.

4. That the plaintiff is hereby released and discharged from any and all liability on account of the certain bond, in the penal sum of one million dollars, executed by said plaintiff and filed with this Court pursuant to the terms of the temporary injunction entered herein on December 21, 1923;

and is further released and discharged from any and all liability on account of the certain bond, in the penal sum of five million dollars, executed by said plaintiff on February 28, 1931, and filed with this Court on March 5, 1931, pursuant to the order of this Court entered on February 28, 1931.

5. That plaintiff shall recover its taxable costs and disbursements of the defendants and intervenor-defendant.

Dated at Chicago, Illinois, June 28, 1933.
Evan A. Evans, William M. Sparks, Circuit Judges.
James H. Wilkerson, District Judge.

To the Decree and the entry the defendants except and their exception is allowed.

Evan A. Evans.

[fol. 2586] In United States District Court

[Title omitted]

Petition for Appeal

To the Honorable Evan A. Evans and William M. Sparks, Circuit Judges for the Northern District of Illinois, and the Honorable James H. Wilkerson, District Judge for said District, constituting a special statutory court under the provisions of Section 266 of the Judicial Code:

Now come Benjamin F. Lindheimer, Ernest J. Kruetgen, G. Gale Gilbert, Andrew Olson, Paul Samuell, Phil W. Collins and Charles E. Byrne constituting the Illinois Commerce Commission of the State of Illinois, and Otto Kerner, Attorney General of the State of Illinois, and the City of Chicago, a municipal corporation, defendants in the above entitled cause, and feeling themselves aggrieved by the final [fol. 2587] decree of said Court entered in said cause on the 28th day of June, 1933, granting a permanent injunction herein and other relief, as appears from said decree, do hereby jointly and severally appeal from said decree so entered in said cause on the 28th day of June, 1933, to the Supreme Court of the United States for the reasons set forth in the Assignment of Errors filed herewith.

Your petitioners pray that their appeal be allowed from the said final decree to the Supreme Court of the United States and that a citation be issued, as provided by law, and that transcripts of the records, proceedings and documents upon which said decree was based, duly authenticated, be sent to the Supreme Court of the United States under the rules of said Court in such cases made and provided, and that the decree of said Statutory Court entered in the United States District Court for the Northern District of Illinois may be reversed and such order made as to the said Supreme Court of the United States may seem meet and just.

And your petitioners further pray that pending the said appeal the plaintiff shall be required to keep such records and accounts as shall enable it, in case said final decree is reversed, to make refund to its several subscribers of any sums paid by them in excess of the sums chargeable to them which would have been collected under the rates prescribed by the Illinois Commerce Commission under its order dated August 16, 1923, and permanently enjoined by this Court, as the Court may direct.

Your petitioners further pray that an order be entered herein by this Court dispensing with an appeal bond or [fol. 2588] other security as a condition for the allowance or perfection of said appeal.

Dated Chicago, Illinois, June 28th, 1933.

Benjamin F. Lindheimer, Ernest J. Kruetgen, Andrew Olson, G. Gale Gilbert, Phil W. Collins, Paul Samuell, Charles E. Byrne, Constituting the Illinois Commerce Commission. Otto Kerner, Attorney General of the State of Illinois. City of Chicago, Intervenor, by Wm. H. Sexton, Corporation Counsel; Benjamin F. Goldstein, George I. Haight, Edmund D. Adcock, Special Counsel.

[fol. 2589] IN UNITED STATES DISTRICT COURT

[Title omitted]

ASSIGNMENT OF ERRORS

Now come Benjamin F. Lindheimer, Ernest J. Kreutgen, Andrew Olson, G. Gale Gilbert, Phil W. Collins, Paul

Samuell, and Charles E. Byrne, constituting the Illinois Commerce Commission of the State of Illinois, Otto Kerner, Attorney General of the State of Illinois, and the City of Chicago, a municipal corporation, defendants in the above entitled cause, by their solicitors, and in connection with their petition for appeal in the above entitled cause now filed herein, make and file their Assignment of Errors setting forth the several errors upon which they rely in the prosecution of the appeal in said cause from the final decree entered in this Court in said cause on the 28th day of June, 1933, and the above named defendants-appellants state that in the record and proceedings, and in the entering of said final decree aforesaid, manifest error has inter-
[fol. 2590] vened to the prejudice of said defendants-appellants, to wit:

Separation of Revenues

(1) The Court erred in Finding of Fact No. 8 in allocating to interstate toll business the following amount of gross revenues arising under existing rates for intrastate exchange service for each of the years 1923 to 1932, inclusive:

1923	$356,041
1924	383,633
1925	453,006
1926	460,104
1927	509,369
1928	588,491
1929	650,247
1930	648,613
1931	601,189
1932	Amount undisclosed.

(2) The Court erred in Finding of Fact No. 9 in allocating to intrastate toll business the following amount of gross revenues arising under existing rates for intrastate exchange service for each of the years 1923 to 1932, inclusive:

1923	$658,676
1924	755,871
1925	869,610
1926	1,015,705

1927	1,139,135
1928	1,275,065
1929	1,405,373
1930	1,481,792
1931	1,319,560
1932	Amount undisclosed.

(3) The Court erred in Findings of Fact Nos. 27, 29, 31, 33, and 34 in allocating to intertsate toll business the following amounts of net income arising under existing rates, and under the rates in suit for intrastate exchange service for each of the years 1923 to 1932, inclusive:

[fol. 2591]

	Under existing rates	Under rates in suit
1923	$260,614	$245,042
1924	278,223	262,398
1925	327,430	309,505
1926	335,599	317,915
1927	373,025	354,372
1928	448,464	427,655
1929	508,729	486,875
1930	492,965	472,469
1931	448,700	431,580
1932	Amount undisclosed.	Amount undisclosed.

(4) The Court erred in Finding of Fact No. 35 in allocating to intrastate toll business the following amounts of net income arising under existing rates, and under the rates in suit for intrastate exchange service for each of the years 1923 to 1932, inclusive:

	Under existing rates	Under rates in suit
1923	$482,231	$453,422
1924	547,619	516,439
1925	627,685	593,274
1926	739,755	700,718
1927	883,826	792,111
1928	970,292	925,205
1929	1,098,525	1,051,292
1930	1,125,953	1,079,128
1931	991,800	954,223
1932	Amount undisclosed.	Amount undisclosed.

(5) The Court erred in Findings of Fact No. 27 and 33 in failing to include in the net income available for return from plaintiff's intrastate business under the existing rates and under the rates in suit the following amounts of net income arising under the existing rates and under the rates in suit for intrastate exchange service:

	Under existing rates	Under rates in suit
1923	$260,614	$245,042
1924	278,223	282,398
1925	327,430	309,505
1926	335,599	317,915
1927	373,025	354,372
1928	448,464	427,655
1929	508,729	486,875
1930	492,965	472,469
1931	448,700	431,580
1932	Amount undisclosed.	Amount undisclosed.

[fol. 2592] (6) The Court erred in Finding of Fact No. 35 in failing to include in the net income available for return from plaintiff's intrastate exchange business under existing rates and under the rates in suit, the following amounts of net income arising under the existing rates and under the rates in suit for intrastate exchange service:

	Under existing rates	Under rates in suit
1923	$742,845	$698,464
1924	825,842	778,837
1925	955,115	902,779
1926	1,075,354	1,018,633
1927	1,206,851	1,146,483
1928	1,418,756	1,352,860
1929	1,607,254	1,538,167
1930	1,618,918	1,551,597
1931	1,440,500	1,385,803
1932	Amount undisclosed.	Amount undisclosed.

(7) The Court erred in Findings of Fact Nos. 8, 9, 27, 29, 31, 33 and 34 and 35 in disregarding the findings of fact and direction by the United States Supreme Court in its Opinion and Mandate of December 1, 1930, in Smith v. Illinois Bell Telephone Co., 282 U. S. 133, in allocating each

year, 1923 to 1932, inclusive, to interstate toll business and to intrastate toll business, substantial portions of the gross and net revenues arising under the existing rates and under the rates in suit for intrastate exchange service.

(8) The Court erred in finding that its separation of intrastate and interstate revenues "has been made on the basis of actual use".

(9) The Court erred in failing to find and to give effect to the fact that the filed Chicago exchange service rates were not intended to, and did not, compensate plaintiff for the unlimited interstate and intrastate uses of its Chicago exchange plant facilities by the users of the interstate and [fol. 2593] intrastate toll services of plaintiff, of the American Telephone & Telegraph Company and of other connecting companies.

(10) The Court erred in failing to find and to give effect to the fact that the compliance was not in each case made with the requirements of the Illinois Public Utilities Act and of the Illinois Commerce Commission Laws necessary as a condition precedent to making applicable to the Chicago exchange service rates (a) the 1919 License Contract between plaintiff and the American Telephone and Telegraph Company covering compensation to plaintiff by its Chicago exchange service rates for the unlimited use by the American Telephone & Telegraph Company or its customers in the American Telephone & Telegraph Company's services (intertsate and intrastate) of the Chicago exchange plant facilities; (b) the 1925 and 1926 revisions of plaintiff's intrastate toll rate schedules covering compensation to plaintiff by its Chicago exchange service rates for the unlimited use by plaintiff's customers in plaintiff's intrastate toll service of the Chicago exchange plant facilities; and (c) the 1926 and 1929 revisions of the connecting company contracts between plaintiff and its connecting companies covering compensation to plaintiff by its Chicago exchange service rates for the unlimited use by them and their customers in their respective interstate and intrastate toll services of the Chicago exchange plant facilities.

[fol. 2594] License Contract Services and Payments

(11) The Court erred in Finding of Fact No. 22 in finding that the amounts of the cost of the services rendered by

the American Company under the license contracts which should be allocated to the operating expenses of the intrastate business of the Illinois Company for each of the years 1923 to 1931, inclusive, are as follows:

1923	$1,088,195
1924	1,156,046
1925	1,369,836
1926	1,412,867
1927	1,422,869
1928	1,005,063
1929	1,040,529
1930	1,191,882
1931	1,068,303

(12) The Court erred in Finding of Fact No. 25 in finding that in determining plaintiff's reasonable operating expense the amounts to be charged on account of the license agreement for the years 1923 to 1931, inclusive, are:

1923	$1,088,195
1924	1,156,046
1925	1,369,836
1926	1,412,867
1927	1,422,869
1928	1,005,063
1929	834,276
1930	864,131
1931	834,199

(13) The Court erred in failing to find that the maximum amount properly chargeable to plaintiff's intrastate operating expenses on account of the license agreement was:

1923	$494,000
1924	550,000
1925	610,000
1926	660,000
1927	680,000
1928	215,000
1929	215,000
1930	219,000
1931	215,000

[fol. 2595] Development and Research Expense

(14) The Court erred in its Findings of Fact Nos. 22 and 25 by allocating to plaintiff the following amounts as representing properly allocable license contract costs of the American Telephone & Telegraph Company's Development and Research Department:

1923	$139,476
1924	145,247
1925	160,036
1926	197,747
1927	241,935
1928	242,605
1929	293,601
1930	387,281
1931	355,295

(15) The Court erred in Findings of Fact Nos. 22 and 25 in failing to give effect to the fact that as part of the American Telephone & Telegraph Company's license contract costs aggregating over $48,000,000 for the period 1923 to 1931, inclusive, to cover its Development and Research expense, plaintiff included the entire expense of developing patents and inventions which found their usefulness outside the telephone communication field.

(16) The Court erred in failing to give effect to the fact that plaintiff was entitled to a credit for its portion of:

(a) The $5,229,141 cash royalties received by the American Telephone & Telegraph Company from 1923 to 1931, inclusive, and the royalties received (amount undisclosed) by it in 1932 under outstanding licenses for the use of its patents and inventions outside the telephone communication field;

(b) The value of the right in the American Telephone & Telegraph Company on December 31, 1932, to receive thereafter—

[fol. 2596] 1. Royalties from outstanding licenses to the Western Electric Company for the sale of Special commercial products outside the telephone communication field embodying the American Telephone & Telegraph Company's patents and inventions;

2. Royalties from outstanding licenses to the motion picture producers and exhibitors comprising over 90% of the industry in the United States and abroad and to the Victor Talking Machine Company, the Columbia Phonograph Company, the Gramophone Company, Ltd., The International Standard Electric Company and others, for the use of the American Telephone and Telegraph Company's patents and iventions embodied in systems and apparatus used by them outside the telephone communication field.

(17) The Court erred in failing to give effect to the fact that plaintiff included, as part of the American Telephone & Telegraph Company license contract costs, the entire amount of its development and research expense to December 31, 1932, of developing patents and inventions embodied in telephonic appliances manufactured and sold during the period 1923 to 1932, inclusive, outside the Bell System, in the United States and abroad, and to be sold thereafter under outstanding licenses by International Western Electric Company, Northern Electric Company, Ltd., International Standard Electric Company, Automatic Electric Company and Graybar Electric Company.

(18) The Court erred in failing to give effect to the fact that plaintiff was entitled to a credit for its portion of—

[fol. 2597] (a) $21,255,085 paid during the period 1923 to 1932, inclusive, by International Western Electric Company, Northern Electric Company, Ltd., International Standard Electric Company, Automatic Electric Company and Graybar Electric Company to the American Telephone & Telegraph Company and its subsidiaries applicable in part as consideration for licenses to use in telephonic appliances manufactured and sold, and to be manufactured and sold, by them outside the Bell System, American Telephone & Telegraph Company's patents and inventions;

(b) Royalties (amount undisclosed) paid from 1923 to 1932, inclusive, to the American Telephone & Telegraph Company and its subsidiaries under outstanding licenses for the use of its patents and inventions embodied in telephonic appliances manufactured and sold outside the Bell System by Northern Electric Company, Ltd., and International Standard Electric Company, and

(c) The value of the right in the American Telephone & Telegraph Company and its subsidiaries on December 31, 1932, to receive thereafter—

1. Royalties from outstanding licenses to Northern Electric Company, Ltd., and to International Standard Electric Company for the right to use the American Telephone & Telegraph Company's patents and inventions in telephonic appliances manufactured and sold by them outside the Bell System;

2. Special participation in the earnings of Graybar Electric Company, as consideration for the license to sell telephonic appliances outside the Bell System embodying American Telephone & Telegraph Company's patents and inventions.

[fol. 2598] (19) The Court erred in failing to give effect to the fact that plaintiff was entitled to credit for its portion of the $6,091,887 cash and of the 159,185 shares of Common Stock of Western Electric Company received by the American Telephone & Telegraph Company during the years 1923 to 1930, inclusive, as bonus consideration for the license granted to the Western Electric Company by the American Telephone & Telegraph Company to sell to the Bell System operating companies, including plaintiff, telephonic appliances embodying American Telephone & Telegraph Company's patents and inventions.

(20) The Court erred in failing to give effect to the fact that the plaintiff's allocation of the Bell System portion of the American Telephone & Telegraph Company's Development and Research expense between the licensee companies (including plaintiff) on the other hand, and the American Telephone & Telegraph Company's Long Lines Department on the other hand, on the basis of plant investment, was contrary to the direction of the Supreme Court and was in violation of law.

(21) The Court erred in failing to give effect to the fact that plaintiff's allocation of the Bell System portion of the American Telephone & Telegraph Company's Development and Research expense between the licensee companies (including plaintiff) on the other hand, and the American Telephone & Telegraph Company's Long Lines Department on the other hand, on the basis of plant investment, unjustly

enriched the American Telephone & Telegraph Company in its Long Lines Department in excess of $20,000,000 for the period 1923 to 1931, inclusive, at their expense.

[fol. 2599] (22) The Court erred in failing to give effect to the fact that plaintiff disregarded existing contractual arrangements between the American Telephone & Telegraph Company, the Western Electric Company and plaintiff, in respect to the manufacture, sale and use of telephones and telephonic appliances embodying the American Telephone & Telegraph Company's patents and inventions in allocating to plaintiff's operating expenses of its Chicago intrastate business and of its Chicago intrastate exchange business Development and Research expenses of the American Telephone & Telegraph Company.

(23) The Court erred in failing to give effect to the fact that the specification by the American Telephone & Telegraph Company as the investor in plaintiff, as to what new inventions, discoveries and improvements in the art should be woven into the plant of plaintiff, protected the American Telephone & Telegraph Company's investment in plaintiff against impairment through failure to keep abreast or ahead of the art.

Ten Departments

(24) The Court erred in Findings of Fact Nos. 22 and 25 by allocating to plaintiff the following amounts, as representing properly allocable license contract costs, of the American Telephone & Telegraph Company's Treasury Department, Information Department, Public Relations Department, the Comptroller's Department, the Secretary's Department, the Administration Department, including sundry items, the General Service Bureau, the Operation O General Bureau, the Legal Department and the Personnel Department:

[fol. 2600]

1923	$290,692
1924	308,410
1925	309,890
1926	355,215
1927	360,267

1928	407,356
1929	399,593
1930	458,630
1931	398,513

(25) The Court erred in its Findings of Fact Nos. 22 and 25, in failing to give effect to the fact that as part of the American Telephone & Telegraph Company's license contract costs aggregating over $60,000,000 for the period 1923 to 1931, inclusive, to cover the operations of the ten departments specified in Assignment of Error No. 24, plaintiff included the entire expense of the operation of each of the departments applicable to the American Telephone & Telegraph Company as the Holding Company investor in the securities of the licensee companies, including plaintiff.

(26) The Court erred in its Findings of Fact Nos. 22 and 25 in failing to give effect to the fact that plaintiff included, as part of the American Telephone & Telegraph Company's license contract costs, more than $11,000,000 of its Treasury Department expense during the years 1923 to 1932, inclusive, which represented the entire expense of the American Telephone & Telegraph Company as a Holding Company investor in the securities of the licensee companies, to distribute among its own stockholders its own stocks and bonds offered direct to them during this period for subscription and purchase and to service all of its own securities outstanding during this period in the hands of its investors.

[fol. 2601] (27) The Court erred in failing to give effect to the fact that the orders of the Illinois Commerce Commission authorizing the sale of plaintiff's stock to the American Telephone & Telegraph Company and the Accounting Rules under which plaintiff functioned during the period 1923 to 1932, inclusive, prohibit the inclusion, as an operating expense of plaintiff, of any portion of its license payment to cover the cost of the American Telephone & Telegraph Company during such period of distribution by the American Telephone & Telegraph Company of its own securities offered by it direct to its investors and of servicing its own outstanding securities issued to raise funds to enable it to purchase, as investor, the securities of plaintiff;

(28) The Court erred in failing to give effect to the fact that plaintiff included as part of its operating expenses, the cost to the American Telephone & Telegraph Company, during the period 1923 to 1932, inclusive, of distributing American Telephone & Telegraph Company's securities offered by it direct to its own investors and of servicing its outstanding securities without allowing credit on account thereof to plaintiff in the Court's finding of rate of return to which plaintiff was entitled to avoid confiscation.

(29) The Court erred in failing to give effect to the fact that the American Telephone & Telegraph Company, as the Holding Company investor in the securities of plaintiff, derived during the period 1923 to 1932, inclusive, at least $10,000,000 earnings more than the American Telephone & Telegraph Company derived on a comparable [Fol. 2602] basis from its investment as the Holding Company investor in the securities of the other licensee companies during the same period.

(30) The Court erred in failing to find and to give effect to the fact that plaintiff included, as part of its operating expenses during the years 1923 to 1932, inclusive, the cost to the American Telephone & Telegraph Company of its operations in the departments specified in Assignment of Error No. 24 applicable to the American Telephone & Telegraph Company, as the Holding Company investor in the securities of plaintiff, without allowing credit on account thereof in the Court's finding of the rate of return to which plaintiff was entitled to avoid confiscation.

(31) The Court erred in finding that the reasonable amount of the cost to the American Telephone & Telegraph Company of the services rendered to plaintiff in its twelve departments which should be allocable to the operating expenses of the intrastate business of plaintiff are:

1923	$581,514
1924	608,586
1925	640,233
1926	741,713
1927	804,460
1928	864,886
1929	907,257
1930	1,063,725
1931	967,126

(32) The Court erred in its Findings of Fact Nos. 22 and 25, by allocating to plaintiff the following amounts, as representing properly allocable license contract costs, to cover plaintiff's compensation to the American Telephone & Telegraph Company for an alleged undertaking by the American Telephone & Telegraph Company to insure and hold harmless plaintiff against patent infringement liability resulting from the use of any apparatus other than telephones recommended to plaintiff by the American Telephone & Telegraph Company:

[fol. 2603]	
1923	$152,942
1924	147,171
1925	281,740
1926	191,060
1927	140,018
1928	137,695
1929	130,786
1930	125,532
1931	98,382

(33) The Court erred in finding that the American Telephone & Telegraph Company was obligated during the years 1923 to September 25, 1930, to insure and hold harmless plaintiff against patent infringement liability resulting from the use of any recommended apparatus other than telephones.

(34) The Court erred in finding that the American Telephone & Telegraph Company provided for meeting possible losses resulting from liability on any obligation in effect during the years 1923 to September 25, 1930, to insure and hold harmless plaintiff against loss or damage from suits or judgments from patent infringements resulting from the use of any recommended apparatus other than telephones by setting up a contingency reserve during that period.

(35) The Court erred in measuring for each of the years 1923 to 1932, inclusive, the reasonable yearly compensation which the licensees should make as part of their license payments to the American Telephone & Telegraph Company for its alleged undertaking to insure and hold them harmless against patent infringement liability result-

ing from the use of any recommended apparatus other than telephones, the $3,000,000 transferred by the American Telephone & Telegraph Company's Executive Committee to Reserve for Contingencies in 1923, the $3,000,000 transferred in 1924, the $6,000,000 transferred in 1925, the $4,000,000 transferred in 1926, and the $14,395,800 transferred in 1927 (spread by the Court over the years 1927 to 1931, inclusive).

[fol. 2604] (36) The Court erred in finding that the $16,000,000 transferred by the American Telephone & Telegraph Company's Executive Committee from surplus to Reserve for Contingencies during 1923 to 1927, inclusive, and the $14,395,800 profit to American Telephone & Telegraph Company (resulting from its sale of telephone instruments on December 31, 1927, to the licensees) transferred by it to Reserve for Contingencies in 1927 should be allocated among the licensees and plaintiff's portion thereof included as an operating expense of plaintiff's Chicago intrastate business or of plaintiff's Chicago intrastate exchange business during the years 1923 to 1932, inclusive.

License Payment as Plaintiff's Contribution to Plan of Unified Operation of Bell System

(37) The Court erred in failing to find and to give effect to the fact that the license payment of plaintiff was its yearly uniform assessment determined by the American Telephone & Telegraph Company to maintain outside plaintiff's territory the operations of the American Telephone & Telegraph Company as the Headquarters' Department functioning for the Bell System as a whole; that such uniform yearly assessment was established upon the basis of an arbitrary percentage of plaintiff's gross operating revenues; that such percentage bore no relation whatsoever to the cost of rendering the service or measurable benefit derived therefrom; that no provision was made for any standard by which its fairness in any particular case might [fol. 2605] be tested, or for any accounting of the surplus remaining over and above the actual costs and expenses thereof, or of the profits made by the American Telephone & Telegraph Company through the benefits of such operations to others than the licensees; that in lieu of such ac-

counting this surplus, together with the surplus remaining from the yearly uniform assessments contributed by the other licensees and the profits from such other uses made by the American Telephone & Telegraph Company, remained in the treasury of the American Telephone & Telegraph Company for the benefit of all the licensee companies; and that machinery was provided, through the prescribed special standard to determine the fair return for each licensee from its own operations, for equitable adjustment among them in lieu of a strict accounting by the American Telephone & Telegraph Company to each for its distributive share thereof.

Depreciation Expense

(38) The Court erred in finding that

"in determining the amounts which should be allowed as annual charges for depreciation, we have given consideration to the estimates in the orders of the Illinois Public Utilities Commission and Illinois Commerce Commission, to the adjustment of such estimates which is necessary to place them on the basis of the present value of the property for the respective years for which such estimates were made by the Commission, to the amounts set up by plaintiff on its books for that expense, to the adjustments of the amounts set up by plaintiff on the basis of original or book cost to make the amounts of such allowances correspond with the present value of the property at the time such amounts were set up on the books of the company, to the experience of the Illinois Company and to the results shown in comparable conditions by other companies which are a part of the Bell System. From a consideration of the evidence on the subjects above stated, we have determined the amounts which in our opinion are reasonable and proper amounts, fair alike to public and private [fol. 2606] interests, to be allowed as the annual charges for depreciation applicable to the intrastate portion of plaintiff's Chicago area property."

(39) The Court erred in finding that the reasonable and proper amount to be allowed as the annual charge for depreciation applicable to the intrastate portion of plaintiff's

said Chicago area property for each of the years 1923 to 1931, inclusive, is as follows:

1923	$4,000,000
1924	4,250,000
1925	4,750,000
1926	5,400,000
1927	6,000,000
1928	6,650,000
1929	7,000,000
1930	7,200,000
1931	7,400,000

Depreciation Expense under 1920 Order

(40) The Court erred in Findings of Fact Nos. 26, 27 and 33 in finding for each of the years 1923 to 1932, inclusive, as the amount of depreciation charges properly applicable to the intrastate and intrastate exchange business in the Chicago area under the existing rates for each of the years 1923 to 1932, inclusive, an amount which exceeded the allowance prescribed by the Public Utilities Commission Order of December 20, 1920, as follows:

	Intrastate	Intrastate exchange
1923	$1,331,388	$1,276,671
1924	1,116,542	1,057,777
1925	1,192,046	1,136,289
1926	1,291,129	1,220,811
1927	1,423,502	1,337,998
1928	1,572,444	1,462,634
1929	1,419,263	1,282,944
1930	1,293,820	1,165,008
1931	1,285,671	1,159,879
1932	Amount undisclosed.	Amount undisclosed.

[fol. 2607] (41) The Court erred in failing to find and to give effect to the fact that plaintiff has made no attack on the exchange service rates prescribed by the 1920 order and no ground exists to hold void that portion of the 1920 Order which prescribes the depreciation charges on Chicago Intrastate and Chicago Intrastate exchange service property to be charged and recorded against gross income produced by the existing telephone rates.

(42) The Court erred in failing to find and to give effect to the fact that in determining the intrastate and intrastate exchange net income produced by the existing telephone rates prescribed by the 1920 Order, this Court, on the present pleadings and record, must give the binding force of a valid legislative act to the 1920 Order on depreciation expense.

(43) The Court erred in failing to find and to give effect to the fact that plaintiff should have charged and recorded against gross income produced by the existing telephone rates only the amount of depreciation charges fixed by the 1920 Order on depreciation.

(44) The Court erred in failing to find and to give effect to the fact that plaintiff's recorded depreciation charge exceeded the amount of depreciation charges fixed by the 1930 Order for each of the years 1923 to 1932, inclusive, as follows:

	Intrastate	Intrastate exchange
1923	$1,540,414	$1,468,147
1924	1,323,046	1,264,338
1925	1,475,531	1,405,925
1926	1,643,145	1,564,490
1927	1,741,736	1,653,390
1928	1,919,774	1,815,308
1929	1,843,678	1,831,900
1930	1,947,182	1,816,781
1931	2,006,806	1,867,609
1932	Amount undisclosed.	Amount undisclosed.

[fol. 2608] Under 1923 Order

(45) The Court erred in Finding of Fact Nos. 26, 30, 34 and 35 in finding for each of the years 1923 to 1932, inclusive, as the amount of depreciation charges properly applicable to the intrastate and intrastate exchange business in the Chicago area under the attacked telephone rates established by the Illinois Commerce Commission Order of August 16, 1923, an amount which exceeded the allowance prescribed the said Order of August 16, 1923, as follows:

	Intrastate	Intrastate exchange
1923	$1,522,418	$1,458,752
1924	1,199,673	1,137,218
1925	1,260,522	1,201,534
1926	1,817,797	1,722,262
1927	2,486,197	2,346,742
1928	3,143,482	2,948,232
1929	3,450,072	3,190,701
1930	3,313,578	3,049,439
1931	2,485,135	2,276,263
1932	Amount undisclosed.	Amount undisclosed.

(46) The Court erred in failing to give effect to the fact that this Court, in determining for itself what would be earned under the attacked telephone rates, must treat with the respect to be attached to a legislative act, the 1923 Order on depreciation expense.

(47) The Court erred in failing to give effect to the fact that the presumption of law is in favor of the validity of the 1923 Order on depreciation expense.

(48) The Court erred in failing to give effect to the fact that plaintiff has failed to establish its burden of proof that the depreciation expense prescribed by the 1923 Order was constitutionally inadequate.

[fol. 2609] (49) The Court erred in failing to give effect to the fact that plaintiff is not constitutionally entitled to recover, through its telephone service rates, as operating expenses during the period 1923 to 1932, inclusive, annual advance contributions for anticipated depreciation on future additions to buildings and central office equipment contemplated to be acquired and to be placed in service from time to time to 1974, under the three following conditions:

(a) Where plaintiff made no provision whatever at the date of such annual advance contributions to assure that such contemplated future additions to 1974 will, in fact, be acquired, and be placed in the future service;

(b) Where the acquisition and placing of the contemplated future additions in the future service to 1974 is within the sole and uncontrolled discretion and power of plaintiff; and

(c) Where plaintiff made no provision whatsoever at the date of such annual advance contributions to assure that to the extent that plaintiff does not in fact acquire and place in the future service to 1974 such contemplated future additions, it will account to its telephone users for the amount of such advance contributions and for all earnings thereon applicable thereto.

[fol. 2610] (50) The Court erred in failing to give effect to the fact that the advance contributions for anticipated depreciation on contemplated future additions are illegal and improper operating expense charges.

(51) The Court erred in failing to give effect to the fact that plaintiff's recorded depreciation expense in each of the years 1923 to 1932, inclusive, included advance contributions for anticipated depreciation on contemplated future additions to buildings and central office equipment.

(52) The Court erred in failing to give effect to the fact that the recorded depreciation expense charges on buildings and central office equipment represented in each year from 46% to 50% of the total recorded depreciation expense and exceeded, by a wide margin, the difference between the recorded depreciation charges and the allowance by the 1920 Order and by the 1923 Order.

(53) The Court erred in failing to give effect to the fact that the contemplated future additions for manual central office buildings on December 31, 1929, of $5,995,000 (All contemplated to be acquired and installed by 1974 and to be retired by 1984) exceeded the undepreciated book investment in manual central office buildings in service on December 31, 1929; that the contemplated future additions for manual central office equipment of $11,563,000 (all contemplated to be acquired and installed by 1943 and to be [fol. 2611] retired by 1944), represented more than one-third of the manual central office equipment in service on December 31, 1929; that the record does not show the amount each year of contemplated future additions for dial central office buildings and equipment or the amount of contemplated future additions for manual central office buildings or equipment other than as on December 31, 1929.

(54) The Court erred in failing to give effect to the fact that plaintiff's recorded depreciation charges on building

and central office equipment each year were very substantially inflated by the inclusion therein of advance contributions for anticipated depreciation on contemplated future additions.

(55) The Court erred in failing to give effect to the fact that plaintiff's use of the straight line method of computing advance contributions for anticipated depreciation on contemplated future additions, without taking into account the earnings on such contributions to the scheduled date for placing in service such contemplated additions, was illegal and created an unfair burden on its telephone subscribers for the unjust enrichment of plaintiff's capital investors.

(56) The Court erred in failing to give effect to the fact that plaintiff's recorded depreciation charges on buildings and central office equipment were very substantially inflated by the inclusion therein of advance contributions for anticipated depreciation on contemplated future additions [fol. 2612] computed on the straight line method without taking into account the earnings on such contributions to the scheduled date for placing in service such contemplated additions.

(57) The Court erred in failing to give effect to the fact that the inclusion in the recorded depreciation charges of advance contributions on contemplated future additions to buildings and central office equipment destroys the probative value of plaintiff's showing of the recorded depreciation expense charges on buildings and central office equipment and destroys the possibility of plaintiff's sustaining its burden of proof that the depreciation allowance prescribed by the 1923 Order was constitutionally inadequate.

(58) The Court erred in failing to give effect to the fact that plaintiff's showing of adjusted recorded depreciation charges on the basis of original or book cost, to make them correspond with its claimed present value of depreciable property at the time such charges were recorded illegally applied to the claimed present value of buildings and central office equipment the same per cent figure as it had applied to their book investment when it computed the recorded advance contributions for anticipated depreciation on contemplated future additions to such buildings and central office equipment.

(59) The Court erred in failing to give effect to the fact that plaintiff illegally inflated, to a very substantial amount, its adjusted recorded depreciation charges on buildings and central office equipment on the basis of original or book cost [fol. 2613] to make them correspond with their claimed present value at the time such charges were recorded, by including therein annual advance contributions for anticipated depreciation on contemplated future additions to such buildings and central office equipment computed on the straight line method.

(60) The Court erred in failing to give effect to the fact that the inclusion in plaintiff's showing of recorded depreciation charges on the basis of original or book cost to make them correspond to the claimed present value of depreciable property at the time when such depreciation charges were recorded, of advance contributions for anticipated depreciation on contemplated future additions to buildings and central office equipment destroys the probative value of the showing of the adjusted depreciation charges on buildings and central office equipment, and destroys the possibility of plaintiff's sustaining its burden of proof that the depreciation allowance prescribed by the 1923 Order was constitutionally inadequate.

(61) The Court erred in failing to give effect to the fact that no issue can arise in respect to the inadequacy in the years 1923, 1924 and 1925 of the depreciation allowance fixed by the 1923 Order as such allowance was substantially the same in each of such years as the depreciation allowance fixed by the 1920 Order.

[fol. 2614] (62) The Court erred in failing to give effect to the fact that the principles established by the United States Supreme Court in United Railways & Electric Co. v. West, 280 U. S. 234, are rendered inapplicable in the determination of the proper method of computing depreciation expense charges of plaintiff's depreciable property by at least six unique features of plaintiff's operation:

(a) The use of the group basis of depreciation treatment on property.

(b) The inclusion in depreciation charges of advance contributions for anticipated depreciation on contemplated future additions computed by the straight line method;

(c) The use of depreciation accumulations to provide reimbursement for its investment in property in service and not to provide for replacements thereof;

(d) The application of depreciation charges to long-lived property in service scheduled for replacement to 1984, whose cost at time of replacement cannot be assumed to be "for all purposes" "present value";

(e) The use in revaluation of its depreciable property of the average of "spot prices" of the Western Electric Company at the beginning and end of the year, as synonymous with "fair value";

(f) The investment experience of the Bell System that "Investors in Bell Telephone securities are not primarily interested in property, as such, but are interested in safeguarding the money invested in the property which so far [fol. 2615] as it will some day be lost in operations is, therefore, what should be covered by the depreciation provision."

(63) The Court erred in failing to give effect to the fact that the depreciation expense charges of other companies which are a part of the Bell System are not comparable and have no probative value in the determination of proper depreciation expense on plaintiff's property in the Chicago area.

(64) The Court erred in failing to find and to give effect to the fact that if the Order of August 16, 1923, on depreciation is held void, the amount of depreciation charges properly applicable under the attacked telephone rates could not in any year exceed the amount of depreciation charges prescribed by the Public Utilities Commission Order of December 20, 1920.

(65) The Court erred in failing to find and to give effect to the fact that plaintiff on the original hearing which resulted in the decree that was appealed to the Supreme Court, claimed and took the position that plaintiff was entitled to fix the annual charges for depreciation expense according to its judgment, and that such annual depreciation charges or expense so fixed by plaintiff were unassailable except for arbitrariness or fraud, on the ground that neither the Illinois Public Utilities Commission under the 1920 Order nor the Illinois Commerce Commission under the 1923 Order, had the authority and power to fix by order

such depreciation rates or annual depreciation charges or expense. The Supreme Court, having held that such position was unsound, the orders of the State Commissions of 1920 and 1923 with reference to depreciation became and were res adjudicata, and plaintiff is precluded from claiming that either one or both of said orders are now invalid.

[fol. 2616] Western Electric Company

(66) The Court erred in finding that for the purpose of determining the reasonableness of the profits of the Western Electric Company, its "average investment" should include "its plant and manufacturing facilities, merchandise, receivables and cash, less current accounts payable, all at cost to Western Electric except merchandise, which is cost or market, whichever is lower".

(67) The Court erred in failing to find that for the purpose of determining the reasonableness of the profits of the Western Electric Company there should be deducted from "average investment" as defined by the Court:

(a) Notes payable on demand and short term notes due on or before one year from date—issued to the American Telephone & Telegraph Company, to Trustee under Pension Fund and to banks and others—aggregating for the period 1916 to 1930, inclusive, $277,545,000, and for the period 1923 to 1930, inclusive, $165,440,000, and ranging from $465,000 to $52,000,000 per year;

(b) The amount of Reserves for Pension Fund aggregating for the period 1916 to 1928, inclusive, $46,210,000 and for the period 1923 to 1928, inclusive, $36,310,000, and ranging from $1,000,000 to $15,364,000 per year;

(c) The amount of Working Reserves representing accrued interest, accrued taxes and accrued accounts payable, aggregating for the period 1926 to 1930, inclusive, $43,511,000 and ranging from $6,912,000 to $11,110,000 per year; and

(d) The amount of excess cash above the normal cash balances—calculated by the Western Electric Company in the regular course of its business, as required for its [fol. 2617] manufacturing operations—aggregating for the period 1916 to 1925, inclusive, $34,966,000, and for the

period 1923 to 1925, inclusive, $22,205,000, and ranging from $901,000 to $20,561,000 per year.

(68) The Court erred in Finding of Fact No. 17 in failing to find that plaintiff's showing in its Exhibit A-194 of the Western Electric Company's "earnings" should be adjusted to:

(a) Redistribute among the years 1916 to 1924, inclusive, the portion allocable to Bell business of $9,393,078, included as part of the operating expenses for the period 1925 to 1929, inclusive, and representing the excess Pension Fund accruals appropriated during the years 1925 to 1929, inclusive, to make up the claimed deficiency in Pension Fund accruals during the period prior thereto to 1916:

(b) Add back to earnings the portion allocable to Bell business of $7,636,000 included as part of the operating expenses for the period 1924 to 1927, inclusive, and representing current deductions from current income during the years 1924 to 1927, inclusive, to make up to the Western Electric Company the excess difference between its book cost of plant and machinery in service during such period over their forecasted reproduction value new during the following 10 to 15 years;

(c) Add back to earnings the portion allocable to Bell business of the $2,000,000 appropriation in 1928 from current earnings as additional depreciation on machinery for the period 1924 to 1927, inclusive;

(d) Add back to earnings the portion allocable to Bell business of depreciation charges on small tools, furniture and fixtures in excess of the amount allowed by the Internal [fol. 2618] Revenue Department and followed by other manufacturers, aggregating for the period 1916 to 1930, inclusive, $12,047,000, and for the period 1923 to 1930, inclusive, $7,286,000, and ranging from $77,000 to $4,690,000 per year; and

(e) Subtract from current earnings the portion allocable to Bell business of interest received on excessive cash balances and paid on demand and short term notes properly deductible from "average investment".

(69) The Court erred in Finding of Fact No. 17 in failing to find that plaintiff's showing in its Exhibit A-194

of the Western Electric Company's "average investment" should be adjusted to deduct therefrom the portion allocable to Bell business of—

(a) Notes payable on demand and short term notes due on or before one year from date;

(b) Working reserves;

(c) Reserve for Pension Fund, and

(d) Excess cash balances.

(70) The Court erred in Finding of Fact No. 17 in finding that plaintiff's showing of "average investment" in its Exhibit A-194 should be adjusted by deducting therefrom the portion allocable to Bell business of the $7,636,000 included as part of the operating expenses for the period 1924 to 1927, inclusive, to make up to the Western Electric Company the excess difference between its book cost of plant and machinery in service during such period over their forecasted reproduction value new during the following 10 to 15 years.

(71) The Court erred in finding in Finding of Fact No. 17 that plaintiff's showing of earnings in its Exhibit A-194 should be adjusted by deducting therefrom, as an operating expense, during the years 1916 to 1922, inclusive, the por- [fol. 2619] tion allocable to Bell business of $2,125,000 purchase price of patents purchased by Western Electric Company during and prior to such period and charged to surplus by Western Electric Company in the regular course of business.

(72) The Court erred in Findings of Fact Nos. 18 and 19 in failing to make the adjustments to "average investment" enumerated in Assignment of Error No. 67, in failing to make the adjustments to "earnings" enumerated in Assignment of Error No. 68, and in making the adjustments enumerated in Assignment of Error No. 70, in its finding of "The Earnings and Profits by Western Electric Company on sales by its Bell Customers".

(73) The Court erred in failing to find that the Western Electric Company's net earnings on average investment less the amount of its depreciation reserve account from Bell sales and non-Bell sales combined for each of the years 1916 to 1930, inclusive, were:

1916	9.2%
1917	10.3
1918	7.9
1919	7.1
1920	7.5
1921	6.0
1922	5.7
1923	6.3
1924	11.1
1925	15.7
1926	16.4
1927	19.7
1928	21.3
1929	20.4
1930	6.5

(74) The Court erred in failing to find that on the basis of separation between Bell sales and non-Bell sales employed by plaintiff in arriving at its showings in its Exhibit [Tol. 2620] A 194 and employed by the Court in arriving at its findings in Finding of Fact No. 18, the Western Electric Company's net profits on average investment less the amount of depreciation reserve account from Bell sales and from non-Bell sales separately for each of the years 1923 to 1930, inclusive, were:

	Bell sales	Non-Bell sales
1916	6.3%	19.8%
1917	5.5	31.0
1918	3.8	21.9
1919	4.4	17.0
1920	6.0	15.0
1921	11.1	36.4*
1922	5.0	12.8
1923	4.4	25.1
1924	10.3	18.6
1925	17.0	5.8
1926	15.6	28.3
1927	19.6	22.1
1928	20.3	32.7
1929	17.2	44.3
1930	6.2	10.4

* Red.

(75) The Court erred in Finding of Fact No. 17 in failing to find that plaintiff's showings in its Exhibit A-194, in each case and for each year, represented arbitrary figures resulting from plaintiff's employment of Standard Cost of Sales of each year as the basis of separation between Bell Sales and non-Bell Sales of Current Cost of Sales Before Interest and Expenses (aggregating more than 80% of the total cost of sales) of Development and Research expense, of General Expense and of plant facilities incurred and used to produce the total production.

(76) The Court erred in failing to give effect to the fact that standard costs are:

(a) Assumed Material Costs which remain constant for many years—the standard cost since 1925 of products using copper or lead is based on 15 cent (per 100 lbs.) copper, and 8 cent (per 100 lbs.) lead, fixed in each case as standard in 1925;

[fol. 2621] (b) Assumed Labor Costs which remain constant for many years—the standard cost from 1928 to the present time of products using labor is based on the labor wage scale fixed as standard in the Spring of 1929; and,

(c) Assumed Overhead Costs which have no relation to the conditions under which the products are manufactured.

(77) The court erred in Findings of Fact Nos. 18 and 19 in employing the Standard Cost of Sales during the period 1916 to 1932, inclusive, as the basis of separation between Bell and non-Bell Sales of the Current Cost of Sales Before Interest and Expenses, Development and Research expense, General Expense and plant facilities incurred and used to produce the total production in arriving at the earnings and profits of Western Electric Company on Bell Sales.

(78) The Court erred in failing to give effect to the fact that the total dollars of variation between the actual and standard costs of the Western Electric Company's total production each year during the period 1916 to 1931, inclusive, (aggregating $273,288,000 for the period 1916 to 1931, inclusive, $182,612,000 for the period 1923 to 1931, inclusive, and ranging from $7,935,000 in 1916 to $37,573,000 in 1929,) represent corresponding variations in the sales

prices of products sold to any one customer or to a group of customers considered as a unit, and represent corresponding variations in the annual net profits of the Western Electric Company from its sales to such one customer or to such group of customers considered as a unit.

[fol. 2622] (79) The Court erred in failing to find that the employment of the Standard Cost of Sales of each year as the basis of distribution between Bell Sales and non-Bell Sales of the total dollars of variation in such year between the standard and actual cost of total production, to arrive at their respective Current Cost of Sales before Interest and Expenses, is arbitrary and fatally defective in the absence of a showing that each year's Bell Sales and non-Bell Sales represent reasonably fair and representative cross sections of the year's total production.

(80) The Court erred in failing to find that the employment of the Standard Cost of Sales of a group of years as the basis of distribution between Bell Sales and non-Bell Sales of the total dollars of variation between the standard and actual cost of such period's total production to arrive at their Current Cost of Sales Before Interest and Expenses is arbitrary and fatally defective in the absence of a showing that such period's Bell Sales and non-Bell Sales represent reasonably fair and representative cross sections of the period's total production.

(81) The Court erred in failing to find that the employment of the Standard Cost of Sales of each year or of a group of years as the basis of separation between Bell Sales and non-Bell Sales of Development & Research expense, and of General Expense, of such year or period of years, is arbitrary and fatally defective in the absence of a showing that such Bell Sales and non-Bell Sales represent reasonably fair and representative cross sections of the total production of each such year or of such period of years.

[fol. 2623] (82) The Court erred in failing to give effect to the fact that plaintiff failed to make any showing that the Bell Sales and Non-Bell Sales represented in any one year or in any group of years from 1916 to 1932, inclusive, reasonably fair and representative cross sections of the

Western Electric Company's total production for such year or period of years.

(83) The Court erred in failing to give effect to the fact that the Bell Sales and non-Bell Sales did not represent in each case in any one year or in any group of years from 1916 to 1932, inclusive, reasonably fair and representative cross sections of the Western Electric Company's entire production for such year or period of years.

(84) The Court erred in failing to give effect to the fact that plaintiff's showing in its Exhibit A-194 of Western Electric Company's earnings on Bell Sales, allocated to Bell Sales more than ninety per cent of the cost to the Western Electric Company of developing patents and inventions embodied in telephonic appliances manufactured and sold outside the Bell System under licenses from the Western Electric Company, by International Western Electric Company, Northern Electric Company, Ltd., International Standard Electric Company, Automatic Electric Company and Graybar Electric Company, and of developing, prior to 1927, patents and inventions which found their usefulness outside the telephone communication field.

(85) The Court erred in Findings of Fact Nos. 18 and 19 in finding the earnings and profits of the Western Electric Company on Bell System Sales on the basis of allocating to Bell System Sales more than ninety per cent of the cost to the Western Electric Company of developing patents and inventions embodied in telephonic appliances [fol. 2624] manufactured and sold outside the Bell System under licenses from the Western Electric Company, by International Western Electric Company, Northern Electric Company, Ltd., International Standard Electric Company, Automatic Electric Company and Graybar Electric Company, and of developing, prior to 1927, patents and inventions which found their usefulness outside the telephone communication field.

(86) The Court erred in its findings of earnings and profits of Western Electric Company on Bell Sales in Findings of Fact Nos. 18 and 19 by failing to allow credit to Bell Sales for their portion of—

(a) $21,255,085 paid during the period 1923 to 1932, inclusive, by International Western Electric Company,

Northern Electric Company, Ltd., International Standard Electric Company, Automatic Electric Company and Graybar Electric Company to the Western Electric Company and its subsidiaries applicable in part as consideration for licenses to use in telephonic appliances manufactured and sold, and to be manufactured and sold, by them outside the Bell System, the Western Electric Company's patents and inventions;

(b) royalties (amounts undisclosed) paid from 1923 to 1932, inclusive, to the Western Electric Company and its subsidiaries under outstanding licenses for the use of its patents and inventions embodied in telephonic appliances manufactured and sold outside the Bell System by Northern Electric Company, Ltd., and International Standard Electric Company; and,

(c) The value of the right in the Western Electric Company and its subsidiaries on December 31, 1932, to receive thereafter—

1. Royalties from outstanding licenses to Northern Electric Company, Ltd., and to International Standard Electric Company for the right to use the Western Electric Company's patents and inventions in telephonic appliances manufactured and sold by them outside the Bell System;

2. Special participation in the earnings of Graybar Electric Company, as consideration for the license to sell telephonic appliances outside the Bell System embodying Western Electric Company's patents and inventions.

[fol. 2625] (87) The Court erred in failing to give effect to the fact that the grossly excessive per cent of earnings, as shown in Assignment of Error No. 74, from non-Bell Sales, is convincing evidence that plaintiff's arbitrary allocation and separation between Bell Sales and non-Bell Sales of revenues, expenses, plant facilities resulted in a substantially unfair discrimination against the Bell Sales.

(88) The Court erred in failing to give effect to the fact that the grossly excessive per cent of earnings, as shown in Assignment of Error No. 74, from non-Bell Sales, is convincing evidence that plaintiff's arbitrary allocation and separation between Bell Sales and non-Bell Sales of revenues, expenses and plant facilities resulted in a substantial

understatement of the earnings of the Western Electric Company from Bell Sales, as shown in plaintiff's Exhibit A-194, in the Court's Findings of Fact Nos. 18 and 19, and in Assignment of Error No. 74.

(89) The Court erred in failing to find that the employment of Standard Cost of Sales as the basis of separation between Bell Sales and non-Bell Sales of plant facilities used for the total production in each year, is arbitrary and fatally defective.

(90) The Court erred in failing to find that the employment of Standard Cost of Sales to measure the usage of plant facilities in the manufacture of Bell Sales and of non-Bell Sales for any one year or for a period of years, is arbitrary and fatally defective.

[fol. 2626] (91) The Court erred in failing to find that the employment of "Cost of Sales" of any year, as synonymous with "Cost of Production" of such year in measuring the usage of plant facilities in the production of such year is arbitrary and fatally defective.

(92) The Court erred in finding that it is necessary in arriving at what are reasonable earnings on investment and profit on sales in the Bell business of Western Electric Company, to take into consideration the results for a period of years and not merely a single year.

(93) The Court erred in failing to find, under the direction of the United States Supreme Court, and to require the plaintiff to show, the reasonableness of Western Electric Company's net earnings on its Bell business for each year in suit.

(94) The Court erred in failing to give effect to the fact that a substantial portion of plaintiff's purchases from Western Electric Company each year 1923 to 1932, inclusive, are attributable to maintenance and other expense accounts, makes it necessary that the reasonableness of West-Electric Company's net earnings on its Bell business be determined for each year in suit.

(95) The Court erred in failing to give effect to the fact that its own finding that Western Electric Company's net earnings on its Bell business are a fair basis for determin-

ing, the reasonableness of Western Electric Company's [fol. 2627] earnings in its dealings with plaintiff, makes it necessary that the reasonableness of Western Electric Company's earnings in its Bell business be determined for each year in suit.

(96) The Court erred in failing to give effect to the fact that plaintiff's method of determining the reproduction cost new of its property as of December 31st for each of the years 1923 to 1931, inclusive, on the basis of the Western Electric Company's prices on December 31st of each of such year makes it necessary that the reasonableness of Western Electric Company's earnings in its Bell business should be for each of such years and not for a period of years considered as a unit.

(97) The Court erred in failing to give effect to the fact that its own finding which approved plaintiff's method of determining the reproduction cost new of its property as of December 31st for each of the years 1923 to 1931, inclusive, makes it necessary that the reasonableness of Western Electric Company's earnings on Bell business be determined for each such years and not for a period of years considered as a unit.

(98) The Court erred in failing to give effect to the fact that its own finding that the reproduction cost new of its property in each of the years 1923 to 1929, inclusive, was the undepreciated fair value of plaintiff's property for each such years, makes it necessary that the reasonableness of Western Electric Company's earnings on Bell business be determined for each of such years and not for a period of years considered as a unit.

[fol. 2628] (99) The Court erred in failing to give effect to the fact that plaintiff's showing of the proper current depreciation allowance in each of the years 1923 to 1931 inclusive, based on the application of a depreciation rate to the current undepreciated reproduction cost new of its property makes it necessary that the results of Western Electric Company's earnings on Bell business be determined for each year and not for a period of years considered as a unit.

(100) The Court erred in failing to give effect to the fact that its own finding of the proper annual depreciation

charge in each year 1923 to 1932 inclusive, which gave consideration to plaintiff's showing of the proper current depreciation allowance for each such year and to the adjustments to convert the yearly depreciation allowances by the 1920 Order and the 1923 Order on the basis of the current value of the property makes it necessary that the reasonableness of the Western Electric Company's earnings on Bell business be determined for each such year and not for a period of years considered as a unit.

(101) The Court erred in failing to give effect to the fact that plaintiff's failure to show that Western Electric Company's Bell Sales and Non-Bell Sales considered as separate units each represents each year a reasonably fair and representative cross-section of Western's total production of the same year, renders impossible of proof the reasonableness of Western's net earnings on Bell business in each year.

[fol. 2629] (102) The Court erred in failing to give effect to the fact that plaintiff's failure to make any showing and its admission that it had no information that the sales of Western Electric Company to plaintiff in any one year represented a reasonably fair and representative cross section of the total Bell sales for the same year, render impossible of proof the reasonableness of Western's earnings on its dealings with plaintiff on the basis of the reasonableness of Western's earnings on its Bell business in the same year.

(103) The Court erred in failing to find and to give effect to the fact that on the basis of plaintiff's separation of revenues, expenses and plant facilities of Western Electric Company between Bell and Non-Bell sales, Western's net earnings from Bell sales (Assignment of Error No. 74) were excessive in 1923, 1924, 1925, 1926, 1927, 1928, 1929 and 1930.

(104) The Court erred in failing to find and to give effect to the fact that on the basis of its finding earnings on average investment less amount of depreciation reserve account in its Finding of Fact No. 19, the Western Electric Company net earnings from Bell Sales were excessive in the years 1925, 1926, 1927, 1928 and 1929.

(105) The Court erred in comparing the Western Electric Company's rate of operating earnings on its Bell business with other manufacturing companies.

(106) The Court erred in finding that Western Electric Company's rate of profit on its Bell sales in comparison with other manufacturing industries, has probative force [fol. 2630] in proving the reasonableness of Western's earnings from its Bell sales and from its dealings with plaintiff.

(107) The Court erred in finding that Western's rate of earnings on its investment in its Bell business and on its investment, less the amount of its depreciation reserve account, has been substantially one-third lower than those of other large manufacturing companies whose risks and hazards make them fairly comparable with Western.

(108) The Court erred in failing to give effect to the fact that plaintiff's showing of earnings made each year by the Western Electric Company during the period 1916 to 1931, inclusive, on its investment allocated to the business done with plaintiff, represented arbitrary figures resulting from plaintiff's separation of the Western Electric Company's annual cost of Bell System Sales and of plant facilities, between plaintiff's business, and the balance of the Bell System business, on the basis of each year's sales to plaintiff and to the balance of the Bell System.

(109) The Court erred in failing to give effect to the fact that the use of sales of each year as the basis of distribution of the total dollars of variation between the standard and actual cost of the Bell System's portion of entire production of each year to arrive at the cost of plaintiff's sales and of the sales to the balance of the Bell System during such year, is arbitrary and fatally defective in the absence of a showing that each year's sales to plaintiff represent a reasonably fair and representative cross section of the total Bell sales for the same year considered as a unit.

[fol. 2631] (110) The Court erred in failing to give effect to the fact that the use of sales as the basis of separation between plaintiff's sales and the sales to the balance of the Bell System considered as separate units, of the Bell System's portion of plant facilities used for the production in each year, is arbitrary and fatally defective in the absence

of a showing that each year's sales to plaintiff represent a reasonably fair and representative cross section of the total Bell System Sales for the same year considered as a unit.

(111) The Court erred in failing to find and give effect to the fact that plaintiff made no showing of the reasonableness in each of the years 1923 to 1932, inclusive, of Western Electric Company's prices and earnings in its dealings with plaintiff during each of such years.

(112) The Court erred in failing to give effect to the fact that plaintiff made no showing from which findings can be made, of the reasonableness in each of the years 1923 to 1932, inclusive, of Western Electric Company's prices and earnings in its dealings with plaintiff during each of such years.

(113) The Court erred in failing to find and to give effect to the fact that on the basis of the Court's finding in Finding of Fact No. 19 of Western Electric Company's earnings from Bell business during each of the years 1925, 1926, 1927, 1928 and 1929, Western's prices and earnings in its dealings with plaintiff were unreasonable and excessive in each of such years.

(114) The Court erred in failing to give effect to the fact that the Western Electric Company's sales prices of its manufactured products, during the period 1916 to 1932, inclusive, were based on standard costs.

[fol. 2632] (115) The Court erred in finding that no unreasonable or unfair profit was made by Western Electric Company prior to 1931 in its dealings with plaintiff, that the prices charged during that period by Western Electric Company have been fair and reasonable, and that its profits have not been excessive.

(116) The Court erred in finding that the earnings made by Western Electric Company in its investment allocated to the business done with plaintiff and its profits on sales to plaintiff were fair and reasonable during the period 1916 to 1930, inclusive, and 1923 to 1930, inclusive.

(117) The Court erred in Finding of Fact No. 19 in finding that the Western Electric Company's profit on Bell Sales in 1931 were 5%, its earnings on average investment

4.2% and earnings on average investment less amount of depreciation reserve account were 5.6%.

(118) The Court erred in Finding of Fact No. 19 that the Western Electric Company's losses on Bell Sales in 1932 were 3.9%, its losses, on average investment 2.3%, and its losses on average investment less amount of depreciation reserve account 3.3%.

(119) The Court erred in failing to give effect to the fact that plaintiff made no showing, and that there is nothing in the record from which any finding can be made, of earnings or losses of Western Electric Company from Bell Sales in 1931 or 1932.

(120) The Court erred in failing to find and to give effect to the fact that the consequences of the use by the Western Electric of standard costs as a factor in establishing prices [fol. 2633] of manufactured products sold to the Bell System are that (a) Western Electric spot prices have no possible probative force as a basis for reproduction cost estimate of plaintiff's property; (b) the average of the Western Electric's spot prices at the beginning and end of each year do not reflect an honest and intelligent forecast of probable material and labor costs for a reasonable period in the immediate future after the date of such spot prices and have no probative force to determine fair value of the property in service to which such spot prices are applied; (c) plaintiff's showing of Western Electric's actual profits derived from the manufactures have no probative force as a basis for plaintiff's showing of the reasonableness of the Western Electric prices of manufactured products to plaintiff.

(121) The Court erred in finding that the prices charged by Western Electric Company to plaintiff and its other Bell customers have, during the entire period 1916 to 1932, inclusive, been lower than prices charged by other manufacturers for comparable materials and also lower than the prices charged by Western to independent telephone companies and others for the same materials.

(122) The Court erred in finding that in determining reasonable operating expenses to be allowed to plaintiff after November 1, 1930, there should be a reduction of only 10% from the prices charged by Western Electric Company on

purchases made by plaintiff attributable to maintenance and other expense accounts.

(123) The Court erred in finding that a large part of Western Electric Company's manufacturing plant and facilities have been constructed by it at less than they could have been purchased from others, and these savings are reflected in its "average investment", as used by the Court in its findings.

[fol. 2634] (123-a) The Court erred in finding that "it appears from the evidence that taking the price level of December 31, 1920, as one hundred per cent, the annual changes in price level of sales by Western Electric Company to plaintiff were as follows:

1921	1.7%
1922	10.7%
1923	0.2%
1924	5.6%
1925	1.1%
1926	8.7%
1927	4.9%
1928	10.3%
1929	8.6%

the price level at the end of 1929 was 58.3% of that of December 31, 1920."

Maintenance

(123-b) The Court erred in failing to find that the maintenance charges of plaintiff in its intrastate and intrastate exchange business were in each case for each of the years 1923 to 1932, inclusive, inflated.

(123-c) The Court erred in failing to find that the amounts included by the plaintiff and by the Court as maintenance charges for each of the years 1923 to 1932, inclusive, in its intratsate and intrastate exchange business were arbitrary amounts.

[fol. 2635] Value of Property in Service for Rate-making Purposes

General

(124) The Court erred in Finding of Fact No. 1, in finding that the fair value of all of plaintiff's property in the

Chicago area, including working cash capital, materials and supplies, construction work in progress and going value, as an average amount during each of the years 1923 to 1932, inclusive, was as follows:

1923	$130,000,000
1924	143,000,000
1925	157,000,000
1926	161,000,000
1927	178,000,000
1928	186,000,000
1929	200,000,000
1930	205,000,000
1931	197,500,000
1932	185,000,000

(125) The Court erred in Finding of Fact No. 2, in finding that the fair value of plaintiff's said Chicago area property, used and useful in its entire intrastate business, as an average amount during each of the years 1923 to 1932, inclusive, was as follows:

1923	$124,200,000
1924	136,500,000
1925	148,500,000
1926	151,500,000
1927	167,000,000
1928	173,000,000
1929	184,000,000
1930	187,120,000
1931	179,100,000
1932	166,500,000

(126) The Court erred in failing to find that there was no evidence whatever in the record upon which the Court could make any finding of fair value of plaintiff's property for the year 1932.

[fol. 2636] Undepreciated Physical Property

(127) The Court erred in approving the method employed by plaintiff in determining the reproduction cost new of the property.

(128) The Court erred in finding that the reproduction costs determined in accordance with the method pursued by plaintiff are reasonably accurate.

(129) The Court erred in finding that the reproduction costs of plaintiff's property in service in the Chicago area exclusive of working cash capital, materials and supplies, construction work in progress and going value on December 31st of each of the years 1923 to 1931 are:

1923	$148,581,042
1924	156,452,212
1925	172,257,055
1926	178,413,771
1927	191,820,622
1928	202,604,906
1929	219,327,112
1930	228,411,330
1931	226,912,713

(130) The Court erred in its Finding of Fact No. 5 in finding that Sloan's method of estimating reproduction cost new of plaintiff's property is reliable, and plaintiff's estimates of reproduction cost new set forth in plaintiff's exhibits A2 to A10, both inclusive, 12, 14, 18 and 43 are substantially correct.

(131) The Court erred in failing to find and to give effect to the fact that the plaintiff has failed to present any convincing evidence of the undepreciated value of its property in service for the years 1923 to 1929, inclusive, which would enable this Court to assign to it any greater [fol. 2637] value new than appears on plaintiff's books for each of the years 1923 to 1929, inclusive.

(132) The Court erred in failing to give proper consideration to the general decline in values beginning with 1929.

(133) The Court erred in failing to give effect to the fact that the Western Electric Company's spot prices have no probative force as a basis for reproduction cost estimate of plaintiff's property.

(134) The Court erred in failing to give effect to the fact that the average of the Western Electric Company's spot prices at the beginning and end of each year have no probative force to determine fair value of plaintiff's property in service to which average prices are applied.

(135) The Court erred in failing to give effect to the fact that plaintiff failed, in respect to valuations for each of the years 1923 to 1932, inclusive, to make an honest and intelligent forecast as to the probable prices and wage levels during a reasonable period in the immediate future.

(136) The Court erred in failing to give effect to the fact that plaintiff's showing of reproduction cost new estimate for each year 1923 to 1931, inclusive, included as a part thereof in each case an excessive amount for undistributed construction costs (overheads).

(137) The Court erred in failing to give effect to the fact that plaintiff's showing of reproduction cost new estimate [fol. 2638] for each year 1923 to 1931, inclusive, included as a part thereof in each case an amount for undistributed construction costs (overheads) which substantially exceeded the amount of such costs shown by the experience and accounting practice of plaintiff to be proper.

(138) The Court erred in finding that plaintiff is entitled to a maintenance of the 1930 price level during the years 1931 and 1932.

(139) The Court erred in failing to give effect to the fact that plaintiff's use of index numbers to adjust book costs to reproduction costs new of its property destroys any probative value of plaintiff's reproduction cost new estimate as a basis for any finding of reproduction cost new or of fair value of the property as of the respective dates of its estimates.

(139-a) The Court erred in failing to give effect to the fact that Western Electric prices during each of the years 1924 to 1930, inclusive, were unreasonable and excessive.

(139-b) The Court erred in failing to find and to give effect to the fact that the book cost of plaintiff's property during each of the years 1923 to 1932, inclusive, was excessive and inflated.

[fol. 2639] (139-c) The Court erred in failing to give effect to the investment experience of the Bell System that "Investors in Bell Telephone securities are not primarily interested in property as such, but are interested in safeguarding the money invested in the property".

Depreciation in Valuation

(140) The Court erred in Finding of Fact No. 6, in finding that the fair rate of depreciation to be applied to reproduction cost new in determining the valuations for rate-making purposes, is sixteen percent for the years 1923 to 1928, inclusive, and fifteen percent for the succeeding years.

(141) The Court erred in failing to give effect to the fact that the portion of the depreciation reserve which represents the advance contributions made prior to and during the period 1923 to 1932, inclusive, for anticipated depreciation on contemplated future additions to central office equipment and buildings, should be deducted from the fair value new of the property in arriving at the rate base.

[fol. 2640] (142) The Court erred in arriving at the fair value of plaintiff's property each year 1923 to 1932, inclusive, by deducting from the reproduction cost new of the property of each such years as found by it, a percentage thereof which was less than the percentage which the amount of plaintiff's depreciation reserve was of the undepreciated book cost of such property as of the same date.

(143) The Court erred in failing to give effect to the fact that by using the straight line method of computing depreciation charges plaintiff has elected to treat the funds represented by the balance in the depreciation reserve as payment for a portion of its capital investment in the service consumed and to be consumed in respect to which it is entitled to reimbursement during the service life of the property.

(144) The Court erred in failing to give effect to the fact that in arriving at the fair value of plaintiff's physical property on the basis of the reproduction cost new of the property each year 1923 to 1932, inclusive, the Court should deduct from the reproduction cost new of such property the percentage new thereof equal to the percentage which the amount of plaintiff's depreciation reserve was of the undepreciated book cost of such physical property as of the same date.

(145) The Court erred in failing to give effect to the fact that in arriving at the fair value of physical property on the

basis of its book cost there should be deducted therefrom the amount of the depreciation reserve as of the same date.

[fol. 2641] Going Value

(146) The Court erred in its Finding of Fact No. 7 in finding that the amount to be added on account of going value to the reproduction cost new of the physical property of the plaintiff in determining valuations for rate-making purposes is eight per cent thereof.

(147) The Court erred in finding that eight per cent is a reasonable allowance for going value.

(148) The Court erred in failing to find and to give effect to the fact that the average annual amount of Going Value which should be included in the rate base, if plaintiff were to be considered as an independent enterprise apart from its relationship to the American Telephone & Telegraph Company as an integrated department thereof, should not exceed the allowance by the Illinois Commerce Commission Order of August 16, 1923.

Rate of Return

(149) The Court erred in Finding of Fact No. 32 in finding that the fair rate of return on the average fair value of plaintiff's intrastate property was 7½% for each of the years 1923 to 1927, inclusive 7% for each of the years 1928, 1929 and 1930, 6½% for 1931, and 5½% for 1932.

(150) The Court erred in finding that the range of from 7½% to 5½%, as found in this case, gives weight "to all of the elements which under the rulings of the Supreme Court we are required to consider".

[fol. 2642] (151) The Court erred in violating the direction of the Supreme Court in failing to find and to give effect to the fact that the amount of recorded intrastate and intrastate exchange net income under existing rates was in each case constitutionally adequate for each of the years 1923 to 1932, inclusive.

(152) The Court erred in failing to give effect to the fact that the rate of return realized by plaintiff from its intrastate and intrastate exchange business under existing

rates was in each case constitutionally adequate for each of the years 1923 to 1932, inclusive.

(153) The Court erred in violating the direction of the Supreme Court in failing to give effect to the finding by the Supreme Court that "in the present case we are not dealing with an ordinary public utility company, but with one that is part of a large system organized for the purpose of maintaining the credit of the constituent companies and securing their efficient and economical management".

(154) The Court erred in violating the direction of the Supreme Court in failing to test the constitutional inadequacy of the intrastate and intrastate exchange net income produced by the attacked rates upon the basis of—(a) comparing such net income with the corresponding recorded net income under the existing rates; and (b) testing the rate of return produced by such net income according to the standard of the Bluefield Case, but giving effect to the unique features of Bell System operations not existing in the case of other businesses in relation to their investors.

[fol. 2643] (155) The Court erred in failing to find and to give effect to the fact that the intrastate and intrastate exchange net income under the attacked rates was in each case constitutionally adequate for each year 1923 to 1932, inclusive, by comparison with the corresponding recorded net income under the existing rates for each such years.

(156) The Court erred in failing to find and to give effect to the fact that the intrastate and intrastate exchange net income under the attacked rates was in each case constitutionally adequate for each year 1923 to 1932, inclusive, according to the standard of the Bluefield Case, as defined by the Supreme Court in its Opinion of December 1, 1930 in Smith v. Illinois Bell Telephone Co., 282 U. S. 133.

(157) The Court erred in failing to give effect to the fact that the intrastate and intrastate exchange net income under the attacked rates was in each case constitutionally adequate for each of the years 1923 to 1932, inclusive, according to the tests for adequate returns used by the Bell Telephone companies throughout the entire Bell System as a basis for financing their respective operations.

(158) The Court erred in failing to give effect to the fact that the intrastate and intrastate exchange net income under the attacked rates was in each case constitutionally adequate for each of the years 1923 to 1932, inclusive, upon the standard of the average return of the Bell Telephone companies throughout the entire Bell System for each of such years.

[fol. 2644] (159) The Court erred in failing to give effect to the fact that plaintiff, as part of the Bell System, differs so widely in form of organization and in relation to the public and the investors from independent enterprises considered that their experience is rendered wholly inapplicable to it.

(160) The Court erred in failing to give effect to the fact that neither the recorded net earnings available for return, nor plaintiff's showing of net earnings available for return, nor the Court's finding of net earnings available for return from the intrastate and intrastate exchange business under the existing rates and under the attacked rates for each of the years 1923 to 1932, inclusive, reflected in any case the following advantages and pecuniary profits, among others, which the American Telephone & Telegraph Company received as the investor in plaintiff, but which are not received by the investor on investments in other business undertakings outside the Bell System:

(a) The free use of the Chicago Exchange Plant facilities in the interests and intrastate services of the American Telephone & Telegraph Company, the expenses of which use the plaintiff reimbursed itself by allocating to the interstate toll and intrastate toll services substantial portions of the intrastate exchange service revenues each year, which said allocation the Court adopted in its findings (Assignment of Error Nos. 1, 2, 3 and 4).

(b) The use free of charge and without payment of adequate compensation, of plaintiff's facilities and personnel to merchandise the American Telephone & Telegraph Company's stocks and bonds aggregating over $52,000,000, in plaintiff's territory to the public, and to plaintiff's em-
[fol. 2645] ployes—the expenses of which use are charged by plaintiff and by the Court as part of plaintiff's operating expenses;

(c) The receipt by the American Telephone & Telegraph Company of reimbursement from plaintiff of the entire amount of the American Telephone & Telegraph Company's expense allocable to the latter as the Holding Company investor in the securities of plaintiff of—

(1) Distributing the American Telephone & Telegraph Company's own stocks and bonds offered by it to its own investors during the period 1923 to 1930, inclusive;

(2) Servicing all of the American Telephone & Telegraph Company's securities outstanding in the hands of its investors during the same period, issued since 1886 through subscription or through underwriters;

(3) Operating ten departments of the American Telephone & Telegraph Company whose operations are concerned in whole or in part with the functions of the American Telephone & Telegraph Company as the Holding Company investor in the securities of the Bell Telephone Operating Companies, including plaintiff (Assignment of Error No. 25);

(d) The receipt to December 31, 1932, and the right to receive thereafter, by the American Telephone & Telegraph Company of substantial royalties and profits from the non-telephone field and from the telephone field outside the Bell System for the use therein of patents and inventions, the expense of development of which was charged as an operating expense of the Bell Telephone Operating Companies, including plaintiff (Assignment of Error No. 18);

[fol. 2646] (e) The receipt by the American Telephone & Telegraph Company of unreasonably large returns on its investment in its Long Lines Department ranging from 13½% to 19.7% on its capital and surplus invested therein during the years 1923 to 1929 and resulting in whole or in part from—

(1) The discriminatory allocation between that department and the Bell Telephone Operating Companies, including plaintiff, of the Bell System portion of development and research expense of the American Telephone & Telegraph Company charged to such companies as part of the license contract costs (Assignment of Error No. 21) and

(2) The surrender by plaintiff of its right under Section 10 of the Original License Contract of 1881 to participate in the receipts and profits of the long distance business transacted in Chicago;

(f) The receipt by the American Telephone & Telegraph Company from the Western Electric Company of substantial royalties as consideration for the franchise to the latter to sell its manufactures to plaintiff, and of unreasonably large returns on its investment in the Western Electric Company resulting from such manufactures the American Telephone & Telegraph Company as the investor in plaintiff providing capital to purchase such manufactures and acting at the same time as the purchasing agent for plaintiff and as selling agent for the Western Electric Company (Assignment of Error No. 19);

(g) The receipt by the American Telephone & Telegraph Company of unreasonably large returns on its investment in the Western Electric Company allocable to non Bell business resulting from the arbitrary separation by the Court of revenues, expenses and property between the Bell and non Bell business and from the failure by the Court to allocate to the non-Bell business its proper portion of the Development and Research expense of the Western Electric Company (Assignment of Error No. 87);

(h) The use in 1923 and thereafter of plaintiff's re- [fol. 2647] sources and credit—

(1) To liquidate to the American Telephone & Telegraph Company $13,800,000 long-past-due indebtedness of the Central Union Telephone Company, which had been impaired and which could not be liquidated upon the credit of the latter;

(2) To permit the American Telephone & Telegraph Company to withdraw in cash as a profit $3,700,000 from the sale of the Central Union properties in Illinois to plaintiff; and

(3) To finance, beginning with 1923, the Central Union properties in Illinois in lieu of using the American Telephone & Telegraph Company's credit, theretofore for many years the sole credit for that purpose;

(i) The receipt by the American Telephone & Telegraph Company of more than $725,000 profit on its transfer to plaintiff of telephone instruments on December 31, 1927, representing plaintiff's Chicago intrastate portion of the $14,385,800 illegal and discriminatory profits made by the American Telephone & Telegraph Company in its transfer of telephone instruments to the Bell Operating Companies on that date;

(j) The receipt by the American Telephone & Telegraph Company of $2,115,000 profit in the transfer of the Western Electric Company's engineering department properties to the Bell Telephone Laboratories, Inc., on January 1, 1927;

(k) The specification by the American Telephone & Telegraph Company, as the investor in plaintiff, what new inventions, discoveries and improvements in the art should be woven into the plant of plaintiff to protect the American Telephone & Telegraph Company's investment against impairment through failure to keep abreast or ahead of the art (Assignment of Error No. 23);

(l) The joinder of plaintiff's employes and the employes of the other operating companies of the Bell System, and of the Western Electric Company, of which the American [fol. 2648] Company is the sole or principal investor, under a plan where the American Company can shift experienced personnel from one section of the country to the other as it sees fit, to protect its interests wherever situated, to strengthen the organization wherever necessary;

(m) The making and furnishing by plaintiff to the American Telephone & Telegraph Company, as its investor, of a detailed statement each year, and for a period of years, in advance of plaintiff's requirements for the purchase of supplies and materials, such statement to be used by the American Telephone & Telegraph Company as the investor in the Western Electric Company for the purpose of enabling the latter company to engineer its manufactures for the protection and benefit of the investment of the American Telephone & Telegraph Company therein;

(n) The security of investment resulting from the insurance by the American Telephone & Telegraph Company, at the expense of plaintiff, as found by the Court, against patent infringement liability in the use of plaintiff's property

in which the American Telephone & Telegraph Company is the investor;

(o) The use of the large fund and the accumulated earnings thereon, of advance contributions for anticipated depreciation on contemplated future additions—

(1) To increase the security for plaintiff's outstanding credit obligations and to increase the equity behind its outstanding capital obligations;

(2) To provide and make available additional earnings and assets to meet the current interest and dividend requirements on plaintiff's credit and capital obligations, to meet the maturing principal of plaintiff's outstanding credit obligations, and to improve plaintiff's earning record in its [fol. 2649] relation to its capital investors; and,

(3) To provide a large portion of plaintiff's capital funds employed in the telephone service from the telephone users, as involuntary investors without their right of interest therein, in lieu of raising such funds through the issue of securities to its capital investors.

(p) The construction and engineering of plaintiff's plant to conform to the plan deemed advisable by the American Company enable the American Telephone & Telegraph Company to furnish satisfactory and profitable long distance service.

(q) The transfer, with the consent of plaintiff, of the allegiance of it's employees to the American Company as the operator of the long distance service.

(r) The right granted by plaintiff to the American Telephone & Telegraph Company to settle all questions of policy and operation of plaintiff on any question that might affect any other Company in the Bell System in which the American Telephone & Telegraph Company is also a stockholder or that might affect the long distance service of which the American Company was the operator.

General

(161) The Court erred in its Findings of Fact No. 10 in finding that plaintiff's reasonable operating expenses, including expense of depreciation, for the intrastate portion

of its said Chicago area business for each of the years 1923 to 1931, inclusive, are as follows:

1923	$30,500,000
1924	32,170,000
1925	34,680,000
1926	37,880,000
1927	40,800,000
1928	45,050,000
1929	47,600,000
1930	48,560,000
1931	46,670,000

(162) The Court erred in its Finding of Fact No. 30 in finding that the net income available for return from that portion of plaintiff's property used in its intrastate business in its Chicago area under the rates fixed by the Illinois Commerce Commission by its order of August 16, 1923, effective October 1, 1923, for each of the years 1923 to 1932, inclusive, was as follows:

1923	$5,104,515
1924	5,932,959
1925	6,297,890
1926	6,402,128
1927	6,686,503
1928	6,914,459
1929	8,939,602
1930	8,492,385
1931	8,392,555
1932	6,750,000

[fol. 2650] (163) The Court erred in finding that plaintiff has earned upon the fair value of its intrastate property, as found hereinabove, for each of the years 1923 to 1932, inclusive, a return in percentages as follows:

1923	5.4%
1924	5.5
1925	5.3
1926	5.3
1927	5.0
1928	5.0
1929	5.8
1930	5.3
1931	5.5
1932	4.8

(164) The Court erred in finding that if the rates in suit had been in effect, plaintiff would have received upon the fair value of its intrastate property as found hereinabove, rates of return for each of the years 1923 to 1932, inclusive, percentages as follows:

1923	4.1%
1924	4.4
1925	4.2
1926	4.2
1927	4.0
1928	4.0
1929	4.9
1930	4.5
1931	4.7
1932	4.1

(165) The Court erred in finding that if the intrastate toll business is separated from the other intrastate business of plaintiff, the rates of return which plaintiff would have received upon its intrastate exchange business for the Chicago area, if the rates in suit had been in force, would have been slightly lower than the rates hereinabove stated for plaintiff's total intrastate business in its Chicago area.

[fol. 2651] Conclusions of Law

(166) The Court erred in denying defendant's motion to require plaintiff to make available for inspection the Minute Books of the Board of Directors of the American Telephone & Telegraph Company covering the period beginning with 1923 and covering the period 1920 to 1922, inclusive.

(167) The Court erred in finding that at all times since the effective date of the order of the Illinois Commerce Commission herein complained of, the telephone rates prescribed in said order have been, and they are now, confiscatory of plaintiff's property; and said order is void.

(168) The Court erred in finding that the interlocutory injunction issued herein should be made permanent.

(169) The Court erred in finding that plaintiff should be released and discharged from all obligation to refund any sums of money collected by it under the terms of the pre-

liminary and interlocutory decrees herein, whether on account of the bond filed herein or otherwise.

(170) The Court erred in finding that plaintiff should recover its taxable costs herein.

(171) The Court erred in failing to find that in view of the relationship between the American Telephone & Telegraph Company and plaintiff, and between the American Telephone & Telegraph Company and the Western Electric Company and its subsidiaries, and between the American Telephone & Telegraph Company and other licensees or operating companies similar to plaintiff, and the relation-[fol. 2652] ship between plaintiff and such other operating or constituent companies, and between plaintiff and the Western Electric Company, resulting from the integration of the business and affairs of all such companies through the ownership of stock and control of such companies by the American Telephone & Telegraph Company, there is an absence of arm's length bargaining between the corporate entities involved and of all the elements which go to fix market value, or the fairness of any contracts or transactions between them. Consequently, the opportunity exists for charges, contracts and transactions unfavorable to the plaintiff (Western Distributing Co. v. Public Service Commission, 285 U. S. 119). Under such circumstances it is difficult, if not impossible, for a court to ascertain and determine the fairness of every transaction and charge between such parties entering into the question of confiscation. It must follow, therefore, that the action of a Commission empowered by a State to fix rates of a constituent operating company such as plaintiff, a member of such combination, should have greater weight and greater force and effect than the action of such Commission with reference to rates of a utility acting independently and autonomously where it had no such relations with a parent company and its other subsidiaries.

(172) The Court erred in failing to find that at all times since the effective date of the Order of the Illinois Commerce Commission herein complained of, the telephone rates prescribed in said Order have been, and they are now, constitutionally adequate; and said Order is valid.

(173) The Court erred in failing to find that plaintiff's bill of complaint should be dismissed for want of equity.

[fol. 2653] (174) The Court erred in failing to find that the interlocutory injunction herein should be vacated.

(175) The Court erred in failing to find that plaintiff should be directed to make refunds, under further order of this Court, in the following amounts in addition to the amounts to be determined for the year 1932 and to the date of final decree herein, together with interest thereon to date of payment.

	Principal (a)	5% Simple interest to April 30, 1933 (b)	Total of (a) & (b)
1923	$527,926	$248,498	$776,424
1924	2,124,632	933,653	3,058,285
1925	2,181,614	849,762	3,031,376
1926	2,203,556	747,984	2,951,540
1927	2,221,798	643,268	2,865,066
1928	2,168,357	519,733	2,688,090
1929	2,060,444	391,063	2,451,507
1930	1,879,411	263,670	2,143,081
1931	1,632,466	147,208	1,779,674
Total	$17,000,204	$4,744,839	$21,745,043
1932	Amount undisclosed.	Amount undisclosed.	Amount undisclosed.
1933	Amount undisclosed.	Amount undisclosed.	Amount undisclosed.

(176) The Court erred in entering the final decree of June 28, 1933.

(177) The Court erred in failing to comply with the terms of Federal Equity Rule 70½ in failing to find the facts specially and stating separately its conclusions of law thereon.

(178) The Court erred in failing to comply with the terms of Federal Equity Rule 70½ in failing to render a [fols. 2654-2659] statement of the grounds of decision on the issues involved both as to fact and law.

Benjamin F. Lindheimer, Ernest J. Kreutgen, Andrew Olson, G. Gale Gilbert, Phil. W. Collins, Paul Samuell, Charles E. Byrne, Constituting Illinois Commerce Commission. Otto Kerner, Attorney General of the State of Illinois. City of Chicago, Intervenor, by William H. Sexton, Corporation Counsel, and Benjamin F. Goldstein, George I. Haight, Edmund D. Adcock, Special Counsel.

[fol. 2660] IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER ALLOWING APPEAL

This day came the defendants and presented to the Court their petition for appeal and assignment of errors, and moved the Court for the allowance of an appeal to the Supreme Court of the United States from the final decree entered herein on June 28, 1933, and upon consideration thereof, it is hereby

Ordered and Adjudged by the Court that leave is hereby given to file their petition and assignment of errors and that said appeal be and the same is hereby allowed from [fol. 2661] the said decree entered June 28, 1933, in the above entitled and numbered cause, and that said appeal shall be returnable to the Supreme Court of the United States.

It is further Ordered that no appeal bond or other security be required by the said defendants, as a condition for the allowance or perfection of this appeal.

It is Further Ordered that pending the said appeal the plaintiff shall be required to keep such records and accounts as shall enable it, in case said final decree is reversed, to make refund to its several subscribers of any sums paid by them in excess of the sums chargeable to them which would have been collected under the rates prescribed by the Illinois Commerce Commission under its order dated August 16, 1923, and permanently enjoined by this court, as the court may direct.

Enter.

Evan A. Evans, William M. Sparks, James H. Wilkerson, Judges.

[fol. 2662] IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER EXTENDING TIME

The parties in the above entitled cause appearing here in open court by their respective solicitors, and for satisfactory reasons appearing to the Court, the time for filing

the transcript of record in this cause in the Supreme Court of the United States, pursuant to the appeal sued out, is hereby extended until and including the 31st day of August, A. D. 1933.

Enter.

Evan A. Evans, William M. Sparks, James H. Wilkerson, Judges.

[fol. 2663] IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER EXTENDING TIME

This cause came on at this term, and upon stipulation of the parties hereto, and upon due consideration, and for satisfactory reasons appearing to the Court, the time for filing the transcript of record in this cause in the Supreme Court of the United States, pursuant to the appeal sued out, is hereby extended until and including the 15th day of September, A. D. 1933.

Enter.

Evan A. Evans, James A. Wilkerson, Judges.

Dated August 25, 1933.

[fol. 2664] IN UNITED STATES DISTRICT COURT

[Title omitted]

NOTICE OF LODGMENT AND MOTION FOR APPROVAL OF STATEMENT OF EVIDENCE

To Charles M. Bracelen, William H. Thompson, Kenneth F. Burgess, Leslie N. Jones, counsel for plaintiff-appellee:

You will please take notice that the defendants in said cause, by their solicitors, have this day lodged with the Clerk of the United States District Court for the Northern District of Illinois, Eastern Division, a statement of the evidence adduced at the hearings of the cause under Rule 75 of Rules of Practice for the Courts of Equity of the

United States, and they will apply to the statutory court [fol. 2665] hearing said cause for the settlement and approval of the statement of evidence as a true, complete and properly prepared statement in that behalf, and to become a part of the record therein on to-wit: the 7th day of September, A. D. 1933, in the court rooms of the Honorable James H. Wilkerson of the said District Court, or at such further time or other place, either or both as said Statutory Court or Judge may appoint.

Otto Kerner, Attorney General of the State of Illinois; William H. Sexton, Corporation Counsel; Benjamin F. Goldstein, George I. Haight, Edmund D. Adcock, Solicitors for Defendants.

September 6th, 1933.

We, the undersigned solicitors for the plaintiff-appellee in the above entitled cause, hereby acknowledge receipt of a duplicate copy of the foregoing notice, and waive the ten day notice for approval of the statement of evidence, this 7th day of September, 1933.

Charles M. Bracelen, William H. Thompson, Edward L. Blackman, Kenneth F. Burgess, Leslie N. Jones, Solicitors for Plaintiff-Appellee.

[fol. 2666] IN UNITED STATES DISTRICT COURT.

[Title omitted]

ORDER APPROVING STATEMENT OF EVIDENCE

This cause came on to be further heard upon proceedings for the approval of a narrative statement in simple and condensed form of the evidence adduced at the trial, and it appearing to the Court that the foregoing statement of the evidence was lodged in due time with the Clerk of this Court and plaintiff received notice of such lodgment, and waived the ten day notice for the approval of same by this Court, and it further appearing to the Court that the testimony of witnesses has been reduced to narrative form and printed, and the various documentary evidence and exhibits have been condensed and bound into volumes, and it further appearing that the printed volumes of testimony in narra-

tive form and exhibits filed in the Supreme Court on April [fol. 2667] 25, 1930, were used in the hearing of this cause;

It is therefore ordered, adjudged, and decreed that the foregoing statement and narrative of evidence, consisting of seven printed volumes of testimony, numbered 1 to 7 inclusive, and 6 volumes of exhibits and documentary evidence, and the statement of evidence contained in the seven *printed volumes* constituting the Transcript of Record filed in the Supreme Court of the United States April 25, 1930, be and the same is hereby settled, allowed and approved as a full, true and correct statement in simple and condensed form of all the testimony, documentary evidence and exhibits introduced in connection with all the proceedings and motions in the above cause essential for the decision of the questions presented by the appeal herein;

It is further ordered, adjudged, and decreed that the said printed volumes of narrative testimony, and the bound volumes of condensed documentary evidence and exhibits, as aforesaid, as filed in the Clerk's office shall be incorporated in the Transcript of Record by the Clerk of this Court on the appeal of this cause to the Supreme Court of the United States.

Enter.

James H. Wilkerson, Judge.

Dated September 7th, 1933.

[fol. 2668] In United States District Court

[Title omitted]

Order Identifying Documents to be Incorporated in Transcript of Record

This cause came on at this term and upon stipulation of the parties hereto, and upon due consideration, and it appearing to the Court that the parties hereto have identified the documents called for in the præcipe for Transcript of Record, filed by defendants on Sept. 7, 1933, by the initials "B. F. G.—L. N. J." and have agreed that the documents so identified are the documents called for in said præcipe,

It is, therefore, ordered, adjudged and decreed that the said documents identified by the initials "B. F. G.—L. N. J."

are the documents called for in the præcipe for Transcript [fols. 2669-2671] of Record, and they shall be treated and accepted in all respects the same as the said original documents, exhibits and testimony taken in this cause, and shall be incorporated in the Transcript of Record by the Clerk of this Court on the appeal of this cause to the Supreme Court of the United States.

Enter.

James H. Wilkerson, Judge.

[fol. 2672] In United States District Court

[Title omitted]

Præcipe for Transcript of Record

To Charles M. Bates, Clerk of the District Court of the United States for the Northern District of Illinois, Eastern Division:

You will please prepare the transcript of record for appeal in the above entitled cause to the Supreme Court of the United States and incorporate in said transcript the following documents, certified as required by law:

1. Placita,

2. Transcript of Record consisting of seven printed volumes filed in the Supreme Court of the United States on April 25, 1930, in this cause entitled Frank L. Smith et al., appellants, vs. Illinois Bell Telephone Company, to the [fol. 2673] October Term, 1930, of the Supreme Court, No. 90, including:

(a) Bill of Complaint,

(b) Petition of the City of Chicago for leave to intervene, filed September 27, 1923,

(c) Order of September 27, 1923, making the City of Chicago defendant, giving the City of Chicago the right to plead,

(d) Order of September 27, 1923, restraining the Illinois Commerce Commission from putting new rates into effect pending the hearing,

(e) Answer of the City of Chicago, filed October 6, 1923, including Exhibits A and B attached thereto,

(f) Answer of Frank L. Smith, et al., filed October 6, 1923,

(g) Motion of complainant for interlocutory injunction,

(h) Interlocutory injunction decree entered December 21, 1923,

(i) Testimony of all parties in narrative form,

(j) Exhibits of all parties including exhibits rejected by order of court,

(k) Opinion of the Court filed January 31, 1930,

(l) Final decree entered February 28, 1930.

3. Mandate from the Supreme Court filed December 29, 1930, reversing decree entered February 28, 1930, and remanding cause for further proceedings in conformity with opinion of Supreme Court rendered December 1, 1930,

4. Order of February 28, 1931, denying defendants' motion to dismiss bill of complaint and reinstating interlocutory injunction,

[fol. 2674] 5. Order of March 5, 1931, amending order of February 28, 1931, nunc pro tunc.

6. Order of March 5, 1931,

7. Bond of plaintiff for $5,000,000 filed March 5, 1931,

8. Order of November 12, 1931, substituting party defendants,

9. Extract from motion of defendants for rule upon plaintiff to furnish or make available for examination certain data, documents and records, filed November 3, 1931,

10. Extract from Memorandum of Plaintiff in Opposition to Defendants' Motion of November 3, 1931,

11. Order of December 4, 1931, granting leave to defendants to take depositions,

12. Order of December 8, 1931, granting leave to defendants to take depositions of certain witnesses at New York City.

13. Order of December 17, 1931, denying defendants' motion for production and inspection of documents filed November 3, 1931,

14. Order of February 19, 1932, substituting Paul Samuell as member of the Illinois Commerce Commission in place of C. W. Hadley,

15. Narrative and condensed statement of evidence of all parties on the hearings held pursuant to mandate of Su-

[fol. 2675] preme Court of United States filed December 29, 1930, including:

(a) Testimony of all parties in narrative form as contained in seven volumes,

(b) Extracts from plaintiff's Exhibits A-1 to A-271, both inclusive,

(c) Extracts from defendants' Exhibits X-1 to X-439, both inclusive, D-1 to D-140, both inclusive, Deposition Exhibits 1 to 205, both inclusive,

(d) Plaintiff's additional objections to Exhibits offered by defendants; answers to Plaintiff's additional objections to exhibits offered by Defendants, and to Plaintiff's objections made in the Record; Plaintiff's Request for Findings (Annotated); Defendants' Request for Findings (Annotated),

16. Order entered December 8, 1932, that William M. Sparks, Judge of the Circuit Court of Appeals for the Seventh Circuit be appointed as member of Statutory Court in place of Judge Page,

17. Opinion of the Court filed April 29, 1933,

18. Findings of Fact, and conclusions of law of the Court, filed April 29, 1933,

19. Order of June 28, 1933, substituting party defendants,

20. Final decree entered June 28, 1933,

21. Petition for Appeal,

22. Assignment of Errors,

23. Statement showing Basis of Jurisdiction as required by Rule 12 of the Rules of Practice of the United States Supreme Court,

[fol. 2676] 24. Statement directing attention to Provisions of Paragraph 3 of Rule 12 of the Rules of Practice of the United States Supreme Court;

25. Order Allowing Appeal and dispensing with bond,

26. Order extending time for filing Transcript of Record entered June 28, 1933.

27. Order extending time for filing Transcript of Record entered August 25, 1933,

28. Notice of Lodgment and Motion for Approval of statement of evidence filed September 7th, 1933,

29. Order approving Statement of Evidence entered September 7th, 1933,

30. Order identifying documents to be incorporated in Transcript of Record,

31. Proof of Service of the following documents on plaintiff by defendants:

(a) Petition for Appeal,

(b) Order Allowing Appeal,

(c) Assignments of Error,

(d) Statements showing the basis of jurisdiction in the Supreme Court,

(e) Statement directing Appellee's attention to Paragraph 3 or Rule 12 of the Rules of Practice of the United States Supreme Court, effective December 15, 1931, and as amended May 31, 1932,

32. This Præcipe for Transcript of Record, and acknowledgement of service of præcipe on Appellee and waiver by Appellee of issuance and service of citation.

Otto Kerner, William H. Sexton, Benjamin F. Goldstein, Edmund D. Adcock, George I. Haight, Counsel for Defendants-Appellants.

Dated at Chicago, Illinois, September 6th, 1933.

[fol. 2677] On this 7th day of September, 1933, the undersigned counsel for the Illinois Bell Telephone Company hereby acknowledge service of the above and foregoing Præcipe, and hereby waive the issuance and service of a citation.

Charles M. Bracelen, William H. Thompson, Edward L. Blackman, Kenneth F. Burgess, Leslie N. Jones, Counsel for Plaintiff-Appellee.

[fol. 2677a] IN SUPREME COURT OF THE UNITED STATES

STATEMENT OF POINTS UPON WHICH APPELLANTS INTEND TO RELY, UNDER RULE 13 OF RULES OF SUPREME COURT OF UNITED STATES, AND DESIGNATION OF PARTS OF RECORD TO BE PRINTED—Filed Sept. 8, 1933

Now come Appellants and state that the points on which they rely in this Court in this case are as follows:

Separation of Revenues

The District Court erred in allocating each year under investigation to interstate toll business and to intrastate toll business substantial portions of the gross and net

revenues arising under the existing rates and under the [fol. 2677b] rates in suit from the Chicago intrastate exchange service. (Assignments of Error 1 to 10 inclusive.)

License Contract, Services and Payments

The District Court erred in its Findings each year under investigation of Appellees' License Contract costs allocable to its operating expenses (Assignments of Error 11, 12, 13), in that it included therein a portion of:

(1) The American Telephone & Telegraph Company's expense properly allocable to it as a Holding Company investor of the securities of Appellee:

(a) of raising capital from the American Telephone & Telegraph Company's investors,

(b) of servicing the American Telephone & Telegraph Company's outstanding securities, and

(c) of operating ten departments of the American Telephone & Telegraph Company whose operations are concerned in whole or in part with the functions of the American Telephone & Telegraph Company as the Holding Company investor of the securities of Appellee.

(Assignments of Error 24 to 31 inclusive, 37, 160.)

(2) Development and Research expense properly allocable to:

(a) the field outside the telephone communication field,

(b) the telephone communication field outside the field covered by the Western Electric Company's sales to its retail customers,

[fol. 2677c] (c) the American Telephone & Telegraph Company's Long Line,

(d) the American Telephone & Telegraph Company as the Holding Company investor in the securities of Appellee,

(e) the American Telephone & Telegraph Company as the licensor, for valuable consideration, of the Western Electric Company to manufacture and sell to Appellee products embodying the results of the American Telephone & Telegraph Company's Development and Research work.

(Assignments of Error 14 to 23 inclusive, 37, 160.)

(3) $30,395,800 transferred from 1923 to 1927 inclusive by the American Telephone & Telegraph Company to its Reserve for Contingencies.

(Assignments of Error 32 to 36, inclusive.)

Depreciation Expense

The District Court erred in allowing as proper depreciation expenses under the existing rates and under the rates in suit during each year under investigation amounts in excess of those prescribed by the Public Utilities Commission Order of December 20, 1920, and the Illinois Commerce Commission Order of August 16, 1923, respectively.

(Assignments of Error 38 to 65, inclusive.)

Western Electric Company

The District Court erred in its Findings on the Rate of Return of the Western Electric Company from its Bell business and from its business with Appellee in that:

[fol. 2677d] (1) Its Findings on "Average Investment" gave no effect as proper deductions to demand and short term notes, Reserve for Pension Fund, Working Reserve, and excess cash above normal cash balances, and the amount of the Depreciation reserve account.

(Assignments of Error 66, 67, 69, 70, 72, 73, 74.)

(2) Its Findings on "Earnings" gave effect as proper deductions for current income, Excess Pension Fund Accruals to make up deficiencies in accruals for prior years, appropriations to make up anticipated future decline in the reproduction value of plant, excess depreciation on machinery, tools, furniture and fixtures, the purchase price of patents and the Development and Research expense of developing patents and inventions of patents properly applicable to the field outside the telephone communication field and to the telephone communication field outside the field covered by Western Electric Company's sales.

(Assignments of Error 68, 71, 73, 84, 85, 86.)

(3) Its separation between Bell sales and non-Bell sales of plant facilities, of Current Cost of Sales before interest

and expense of Development and Research expense, and of general expense, on the basis of "standard cost of sales," was arbitrary and fatally defective.

(Assignments of Error 75 to 83, inclusive, 87, 88 to 91 inclusive, 108 to 110 inclusive, 114.)

[fol. 2677e] (4) The District Court erred in its Findings on the reasonableness of the Western Electric Company's earnings on its Bell business, and on its business with Appellee as determined by it, and on the extent to which they enter into the issue of confiscation, in that:

(a) it determined the reasonableness of such earnings on the basis of periods of years 1916 to 1932, inclusive, and 1923 to 1932, inclusive, considered as two units of time, instead of for each year under investigation;

(b) it failed to find that in each the years 1923 to 1930, inclusive, considered as separate units of time, Western Electric Company's earnings on its Bell business and on its business with Appellee were excessive;

(c) it failed to find that there was nothing in the record from which any findings could be made of the return to Western Electric Company from Bell sales in 1931 and 1932;

(d) it determined the reasonableness of Western Electric Company's earnings on Bell business by comparison with non-comparable earnings of other non-comparable manufacturing companies;

(e) it determined the reasonableness of Western Electric Company's earnings on Bell business by comparison of Western Electric Company's prices to its Bell System customers with noncomparable Western Electric Company's prices to its non-Bell customers.

(Assignments of Error 92 to 107, inclusive, 111 to 113 inclusive, 115 to 123-a, inclusive.)

[fol. 2677f] Maintenance

The District Court erred in failing to find that on the basis of its Findings on the Western Electric Company's earnings on business with Appellee, the maintenance charges of Appellee representing purchases from the Western Electric Company were arbitrary and excessive for

each year under investigation. (Assignments of Error, 122, 123-b, 123-c.)

Value of Property in Service for Rate-making Purposes

The District Court erred in its Findings of Fair Value for each of the years 1923 to 1932 inclusive. (Assignments of Error 124 and 125), in that:

(1) Its Findings on Reproduction Cost New of the Property in Service gave effect to:

(a) Appellee's showing on Reproduction Cost New of the physical property based on methods of computation which were arbitrary and fatally defective and on prices established on an arbitrary basis;

(b) Appellee's showing of undistributed construction costs (overheads) based on arbitrary assumptions, which were contrary to Appellee's experience and accounting practices.

(2) Its Findings on Undepreciated Value New of the Property in Service failed to give effect to:

(a) an honest and intelligent forecast as to the probable prices and wage level during a reasonable period in the immediate future after the date of the respective valuations, and

[fol. 2677g] (b) the general decline in value beginning with 1929, and.

(c) the absence in the record of any facts on which to predicate Findings for the year 1932 and thereafter.

(Assignments of Error 126 to 139-c inclusive.)

(3) Its Findings on Fair Value of the Property in Service for Rate Making purposes:

(a) Included amounts for Going Value in excess of the allowance by the Illinois Commerce Commission Order of August 16, 1923, which amounts were based on assumptions which were arbitrary and in violation of the applicable principles established by this Court (Assignments of Error 146 to 148, inclusive);

(b) Failed to give effect to the amounts in the depreciation reserve account as payments through the rates for service to Appellee for a portion of its capital investment

in the service consumed and to be consumed during the service life of the property (Assignments of Error 140 to 145, inclusive).

Fair Return

The District Court erred in its Findings on the required minimum return to avoid confiscation and on the constitutional inadequacy of the existing and attacked rates, in that:

[fol. 2677h] (1) It failed to give effect to the fact that Appellee was part of a system which functioned under a unique Mutual Plan of Operation, under which Appellee burdened its operations for the benefit of the American Telephone & Telegraph Company as consideration for the reciprocal benefits from the American Telephone & Telegraph Company as its investor and as its financing agency. The District Court gave effect to the burdens on Appellee in its Findings on Separation of Revenues, License Contract Service and Payment, Western Electric Company, Maintenance, and Value of Property in Service for rate making purposes, but failed to give effect to the reciprocal benefits from the American Telephone & Telegraph Company in its Findings on Fair Return.

(Assignments of Error 149 to 151 inclusive, 153, 158 to 160 inclusive.)

(2) It failed to give effect to Appellee's actual experience during the years under investigation under the recorded return from the existing rates and to the comparable actual experience of the Associated Companies of the Bell System.

(Assignments of Error 152, 154, 155 to 157 inclusive.)

(3) It failed to make any application of that part of the standard of the Bluefield case covering the required minimum return to attract capital and to maintain the stability of the securities of the complaining utility, and misapplied [fol. 2677i] that part of the standard of the Bluefield case covering the required minimum return by comparison with the return generally received by investors in other business undertakings of corresponding risks and uncertainties.

(Assignment of Error 156.)

(4) Its Findings on Fair Return covering the year 1932 and thereafter had no facts in the record in support thereof and were based on facts of other business undertakings of

which the District Court claimed it took judicial notice which had no application to the distinctive essential conditions surrounding Appellee's operations and its relations to its investors.

(Assignment of Error 153.)

Minute Book

The District Court erred in denying Appellants' Motion to require Appellee to make available for inspection the Minute Books of the American Telephone & Telegraph Company, covering the periods 1920 to 1922 inclusive, and 1923 through the years under investigation. (Assignment of Error 166.)

General.

The District Court erred in the relief granted, in failing to find the conclusions set forth in Assignments of Error 171 to 175 inclusive, and in making the conclusions set forth in Assignments of Error 161 to 170 inclusive, and 176.

The District Court erred in failing to comply with the terms of Federal Equity Rule 70½. (Assignments of Error 177 and 178.)

[fol. 2677j] And Appellants further state that the entire Transcript of Record is necessary for proper consideration of the case on appeal; and there has been printed Volumes 1 to 7 and Volumes 15 to 21 of the Transcript, and the Clerk should therefore print the portions of the Transcript of Record not printed, which are:

Volume Number 8 of Transcript of Record, containing Objections to Exhibits, Answers to Objections, and Requests for Findings by the parties hereto;

Volume Number 9 of Transcript of Record, containing Orders, Motions, etc.;

Volume Numbers 10 to 14 inclusive of Transcript of Record, containing Exhibits of the parties hereto.

Proof of Service on Appellee is appended hereto.

Benjamin F. Lindheimer, Ernest J. Kruetgen, Andrew Olson, G. Gale Gilbert, Phil. W. Collins, Paul Samuell, Charles E. Byrne, Constituting the Illinois Commerce Commission. Otto Kerner, Attorney General of the State of Illinois. City of Chicago, Intervenor, by Wm. H. Sexton, Corporation Counsel; Geo. I. Haight, Benjamin F. Goldstein, Edmund D. Adcock, Special Counsel.

[fol. 2677k] AFFIDAVIT OF SERVICE

STATE OF ILLINOIS,
County of Cook, ss:

Harry H. Ruskin, being first duly sworn, upon his oath deposes and says that he is a resident of the state aforesaid, and of the County of Cook; that he is employed in the office of Benjamin F. Goldstein, one of the Counsel for Appellants in the above entitled cause; that he has this day served on the attorneys for the Illinois Bell Telephone Company the following document,

[fols. 2677l & 2677m] Copy of Statement of Points Upon Which Appellants Intend to Rely, Under Rule 13 of Rules of Supreme Court of United States, and Designation of Parts of Record to be Printed,

by delivering the said document to Leslie N. Jones, counsel for Appellee, 212 West Washington Street, Chicago, Illinois, on the 7th day of September, 1933, at the hour of 10 A. M.

Harry H. Ruskin.

Subscribed and sworn to before me this 7th day of September, A. D. 1933. Kathleen Butler, Notary Public. (Seal of Kathleen Butler, Notary Public, Cook County, Ill.)

[fol. 2677n] . [File endorsement omitted.]

[fols. 2678 & 2679] IN UNITED STATES DISTRICT COURT

LINDHEIMER et al., etc., and CITY OF CHICAGO, Appellants,

vs.

ILLINOIS BELL TELEPHONE COMPANY, Appellee

STIPULATION AS TO EXHIBITS

For the purpose of shortening the record in the Supreme Court it is stipulated:

1. That there be included in the record on appeal to the Supreme Court a complete copy of Exhibit A-2 containing the Sloan study for December 31, 1923 and the summary sheet only of Exhibits A-3 to A-10, inclusive, with such further sheets therefrom as were specifically referred to during the testimony of W. F. Sloan. Plaintiff's Exhibits A-2 to A-10, both inclusive, are a series of exhibits cover-

ing the years 1923 to 1931, respectively, identical in form, each comprising 78 pages showing corresponding data for each year.

2. That the method employed by Sloan in the studies identified as Exhibits A-3 to A-10, inclusive, was identically the same method shown in Exhibit A-2 except for those variations specifically disclosed in the testimony of Sloan, which variations Appellants do not question and shall not question in the Supreme Court.

3. That the method employed by Sloan as shown by Exhibit A-2 and the testimony was applied, without mathematical error in the computations, to arrive at the results shown by the summary sheets of A-3 to A-10, inclusive.

[fol. 2680] 4. Appellants shall not, in the Supreme Court, urge that the plaintiff has failed to sustain its burden of proof by reason of the fact that said Exhibits A-3 to A-10 are not in the record in the Supreme Court.

For the purpose of shortening the record in the Supreme Court it is agreed:

1. That Appellants will not raise, in the Supreme Court, the issue of the correctness of the separation made by plaintiff of its property in its Chicago Exchange as between exchange, intrastate and interstate.

2. That Appellants shall not raise, in the Supreme Court, any question of the correctness of the amount of the Pension Fund Accruals of the American Telephone and Telegraph Company and of the Illinois Bell Telephone Company.

3. That there is included in the record in the Supreme Court, from Exhibit A-17, Items 1, 2, 3 and 4 and Sheets 20, 21 and 22. The method employed by witness Renwick in arriving at the reconstruction value of each of the buildings of Appellee in its Chicago Exchange as of December 31st of each of the years 1923 to 1930, inclusive, was identical to that shown by said Items 1 to 4, inclusive; that the figures shown on Sheet 20 of said Exhibit, which is also included in the record, are the correct totals of the reconstruction costs of the various buildings so arrived at, the details for which are omitted from the record in the Supreme Court, except for Items 1 to 4, inclusive; that Sheets

21 and 22 contain reconstruction costs of said buildings for 1931 arrived at on the same basis as for the previous years.

[fol. 2681] 4. That there is included in the record Sheet 1 of Exhibit A-18, which gives the total valuations as of December 31st of each of the years 1923 to 1930, inclusive, of all of the real estate and leaseholds, exclusive of improvements, valued in the opinion of witness Huston in the manner stated in the evidence. Said valuations are the totals for each year of the corresponding values for the several individual parcels of land and leaseholds owned by said Appellee during said period, as such individual values were shown in the detail sheets of Exhibit A-18, which said detail sheets are omitted from the record in the Supreme Court. That the values shown on Sheet 48 covering the year 1931 were arrived at on the same basis, and the detail sheets covering that year are likewise omitted.

5. That Appellants will not raise, in the Supreme Court, any question relating to the accuracy and correctness of Exhibits A-146, A-147 and A-148 as an Actuarial Study, nor will they question that Exhibits A-131 to A-145, inclusive, and Exhibit A-149 (showing in part the details and method by which Witness Hunter arrived at his conclusions shown in Exhibits A-146, A-147 and A-148) support said Exhibits A-146, A-147 and A-148.

6. That Appellants will not raise any issue on this appeal that the figures shown in Exhibit A-108 are unsupported because of the omission from the record of Exhibits [fol. 2682] A-102 to A-107, inclusive, which said exhibits showed the details of the amounts appearing in A-108 on the basis described by Witness Gherardi, nor will Appellants raise any issue of the correctness of the figures in A-108 on the basis of the method of allocation described by said Witness Gherardi.

7. It is agreed that, for all issues arising on appeal, Exhibits A-19 to A-21, inclusive, A-23 to A-38, inclusive, and A-210, omitted from the record in the Supreme Court, showed a very thorough inspection of Appellee's property in its Chicago Area in minute detail as of December 31, 1930, the summary sheet of which, Exhibit A-2, is included, and accurately recorded what the inspection purported to show, that is, the per cent condition of the property as that term was used and understood by Appellee's witnesses. No

question will be raised by Appellants in the Supreme Court because of the omission of said exhibits from the record.

WM. H. SEXTON,
GEO. I. HAIGHT,
BENJAMIN F. GOLDSTEIN,
EDMUND D. ADCOCK,
OTTO KERNER,
Solicitors for Appellants.

CHARLES M. BRACELEN,
W. H. THOMPSON,
E. L. BLACKMAN,
K. F. BURGESS,
LESLIE N. JONES,
Solicitors for Appellee.